



Monongahela National Forest

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Monitoring & Evaluation Report Fiscal Year 1999

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FOREST SUPERVISOR'S MESSAGE

Massive cutting of West Virginia's forests at the turn of the 20th century severely impacted terrestrial and aquatic ecosystems. The Monongahela National Forest was purchased to help restore these disturbed ecosystems and provide long-term watershed protection and natural resource management. The Monongahela is the fourth largest National Forest in 20 northeastern states, and is within one day's drive of one-third of the population of the United States. It consists of over 909,000 acres in 10 counties in West Virginia (Barbour, Grant, Greenbrier, Nicholas, Pendleton, Pocahontas, Preston, Randolph, Tucker, and Webster).

As is consistent with national Forest Service policy, the Forest has been focusing its efforts on managing vegetation for multiple resources, especially endangered, threatened, and sensitive species; restoring disturbed watersheds; and improving recreation experiences for our visitors.

Vegetation and Wildlife Management

The Monongahela contains a diversity of vegetation and wildlife species. Approximately 75 tree species are found on the Forest. Because of logging at the turn of the 20th century, almost all of the trees are second-growth forest. The tree species most valuable for timber and for wildlife food are the black cherry and the oaks. The Forest works in cooperation with multiple state and federal agencies, as well as interested publics and conservation groups, to manage the diverse mix of species and ages of trees to provide wildlife habitat and produce timber products, etc. Both even-age and uneven-age management methods are used.

The Forest provides habitat for 9 federally listed endangered or threatened species: 2 bird species, 2 bat species, 1 subspecies of flying squirrel, 1 salamander species, and 3 plant species. Fifty other species of rare/sensitive plants and animals also occur in the Forest. There are 230 species of birds known to use the Forest; 159 species are known to breed in the NF, 89 of which are Neotropical migrants; 71 species use the forest during migration but do not breed here, 17 of which are non-breeding species are Neotropical.

Hunting, trapping, and wildlife viewing are popular uses of the Forest. Game species include black bear, wild turkey, white-tailed deer, gray and fox squirrels, rabbits, snowshoe hare, woodcock, and grouse. Limited waterfowl habitat exists in places. Furbearers include beaver, red and gray fox, bobcat, fisher, otter, raccoon and mink. Other hunted species include coyotes, skunks, opossums, woodchucks, crows, and weasels.

Watershed Management

Fishing also is a popular use of the Forest. The headwaters of five major river systems are located on the Forest: Monongahela, Potomac, Greenbrier, Elk, and Gauley. These waters support 12 species of game/pan fish and 60 species of nongame/forage fish. The Monongahela has 129 miles of warm water fishing and 576 miles of trout streams; approximately 90% of the trout waters of West Virginia are within the Forest.

Although forest vegetation has regenerated since the early 1900's, hundreds of miles of old roads and railroad grades, which were used to remove forest products, are still affecting natural drainage patterns. They continue to contribute sediment to streams. Between 60 and 70% of the surveyed streams within the Forest have elevated fine sediment levels in spawning gravels, which is seriously impairing trout reproduction. These high sediment levels, as well as acidity and lack of large woody debris in stream courses, are adversely impacting aquatic resources. The abandonment or repair, revegetation, and stabilization of old roads and grades and the restoration of natural drainage are very costly. An estimated 17 million dollars worth of watershed restoration needs have been identified on the Forest.

Significant public support for the Forest's watershed restoration efforts exist as evidenced by numerous past and potential partners from private industry, other federal and state agencies, academia, and groups such as Trout Unlimited and the Shavers Fork Coalition. The Forest has completed 2 of 25 high priority watershed assessments and is in the process of completing more. With the help of multiple partners, extensive watershed restoration work already has been accomplished at the head of the Shavers Fork of the Cheat River. Besides stopping active erosion and improving watershed health, the work in the Shavers Fork Watershed also has benefited recreation users and addressed many of the main goals of the Forest's recreation program.

Recreation Management

The Monongahela is a recreation destination and major tourism attraction, hosting approximately 3 million visitors annually. Both semi-primitive and developed recreation use are expected to continue climbing, as more and more families from the eastern metropolitan areas discover the scenic beauty and rich terrestrial diversity of the West Virginia mountains. Entrepreneurs and tourism commissions have begun aggressively marketing the recreational potential of the Forest, and the number of tourism-related businesses is growing rapidly. However, the Forest's infrastructure is aging and in need of costly repairs to support increased visitor use, and recreation operations and maintenance budgets have declined precipitously over the years.

To meet expected demands, improve service to our visitors, and reduce reliance on appropriated funds, the Forest has placed many areas under fee demonstration and concessionaire management; these efforts allow money generated at a given site to be reinvested to improve and maintain that site. To further improve recreation experiences for our visitors, the Forest has hired a partnership coordinator to pursue the abundant opportunities to work with rail-trail groups, mountain biking groups, local conservation organizations, and local communities. Seneca Rocks Discovery Center visitors already benefit from the Forest's partnerships with the National Forest Foundation, the Eastern National Forests Interpretive Association, the State of West Virginia, and West Virginia University. Our partnership coordinator is also exploring partnership opportunities to improve program delivery in other arenas, such as wildlife and timber management.

Conclusion

This report provides information regarding our accomplishments in the above programs, as well as many other programs. Please take time to review this document and contact us if you have any questions. We welcome your involvement in the management of the Monongahela National Forest.

/s/ Charles L. Myers

Charles L. Myers
Forest Supervisor

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INTRODUCTION

An extensive analysis of long-term management opportunities, resource capabilities, and various public needs was conducted for the Monongahela National Forest (Forest) in the 1980's. This analysis was documented in the *Final Environmental Impact Statement for the Monongahela National Forest Land and Resource Management Plan* (FEIS) and resulted in the *Monongahela National Forest Land and Resource Management Plan* (Forest Plan), which was approved in 1986. The Plan accomplished the following:

1. Allocated land to specific management prescriptions;
2. Identified long-term management objectives; and
3. Developed general and area-specific standards and guidelines to provide multiple, sustainable benefits for people's advantage and enjoyment.

This Monitoring and Evaluation Report for Fiscal Year (FY) 1999 describes some of the progress the Forest has made in meeting *Forest Plan* direction; and it compares recent accomplishments with outputs predicted in the *FEIS*. For some topics, this report compares accomplishments over several years. In most cases, data for 1987-1996 were obtained from the July 25, 1997 Monongahela National Forest Trends Report for Fiscal Years 1987-1996. Data displayed for 1995-1999 were taken from fiscal year 1995, 1996, 1997, 1998, and 1999 Management Attainment Reports.

Readers should note that *Forest Plan* projected outputs are average annual figures. Accomplishments in each activity are not required every year, and opportunities to do some activities may not present themselves in a particular year.

Actual outputs for a given year may fluctuate considerably from the planned amount due to shifts in funding and national and regional priorities. The Forest has experienced rising unit costs and considerable declines in staffing and budget in the past several years, while the workload has remained steady or increased. Increasing amounts of time are being spent on process (e.g. conducting environmental analyses; responding to Freedom of Information Act requests and appeals) while resource management needs and opportunities go unmet.

FOREST FINANCES

What did the Plan say?

The *Forest Plan* estimated that long-term budgets (National Forest System allocations) would increase over time from \$4,679,000 in 1986 to \$7,284,000 in 1995 (Forest Plan, Appendix N-2 as amended); and that dollars returned to the treasury would increase, from \$2,310,000 in 1986 to 3,970,000 in 2000 (Forest Plan, p. 42). It stated that returns to local governments should be tracked (Forest Plan p. 258).

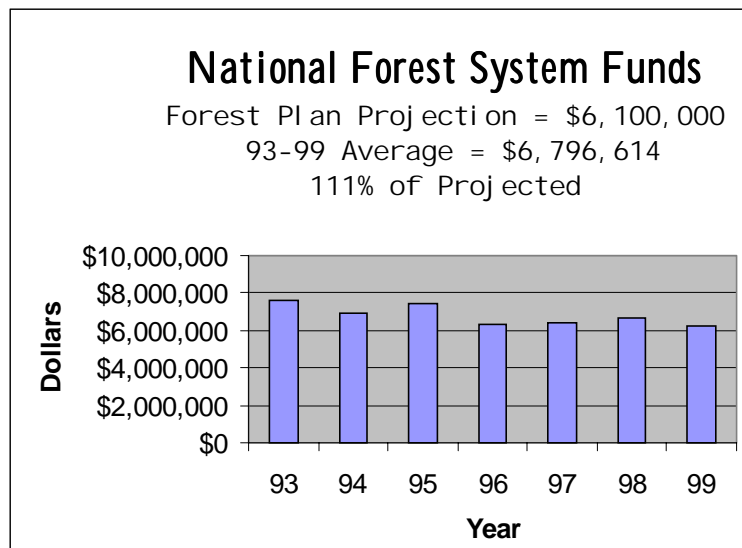
Payments to local governments come in two ways--25% Funds and "Payments in Lieu of Taxes" (or PILT):

1. Payments from the 25% Fund are made to the state of West Virginia for redistribution to counties in proportion to the number of acres of national Forest land within each county. These payments are limited to use for schools and roads. The 25% Fund is made up of 25% of National Forest receipts resulting from timber sales (timber cut), grazing, recreation use, land uses, and minerals.
2. PILT is an annual allocation by Congress that is paid to counties containing any of several specific types of federal lands, including National Forests. The rate of payment is established for "Entitlement Acres" (lands on tax rolls at time of acquisition). PILT can be used for any governmental purpose to help offset losses in property taxes due to nontaxable Federal lands within their boundaries.

What has been monitored?

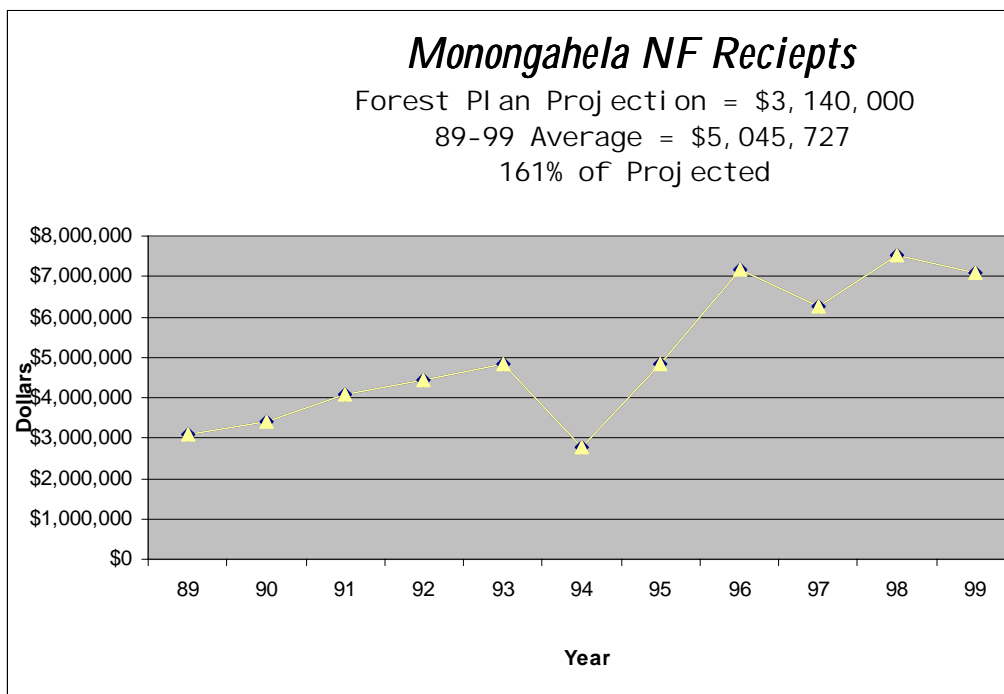
The Forest workload has remained steady or increased over time. However, more time is being spent on process (e.g. conducting environmental analyses; responding to Freedom of Information Act requests and appeals), while resource management needs and opportunities go unmet. Over time, unit costs have risen and staffing and budgets have declined considerably. The Forest's average budget between 1993-2000 has been 6.8 million, within the range projected by the Plan (this is NFS figure only). The following displays National Forest System allocations from 1993 through 1999.

Figure 1. Total NFS Allocations between 1993 and 1999.



As Figure 1 shows, the Forest's budget has declined from a budget of \$7.6 million in 1993 to a budget of \$6.2 million in 1999. However, total returns to the treasury (except in 1994) have increased over time, from \$3,077,000 in 1989 to \$7,377,000 in 1999 (includes mineral receipts):

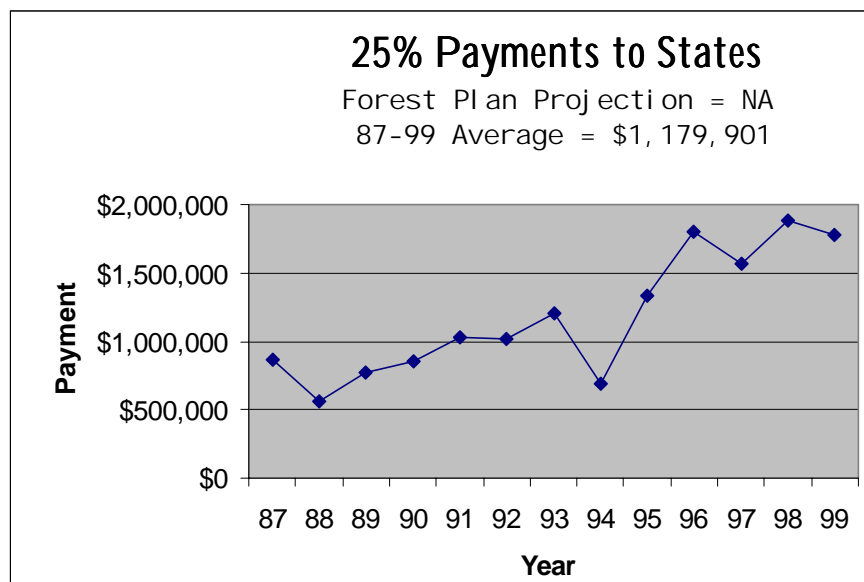
Figure 2. Monongahela NF Receipts Generated Since 1989.



The average return was \$5,045,727 (does not include mineral receipts for all years), noticeably more than Plan projections. The increase in Monongahela receipts in times of declining NFS funds and staffing has been possible because of changes in (1) timber values and (2) gas leases and royalty payments.

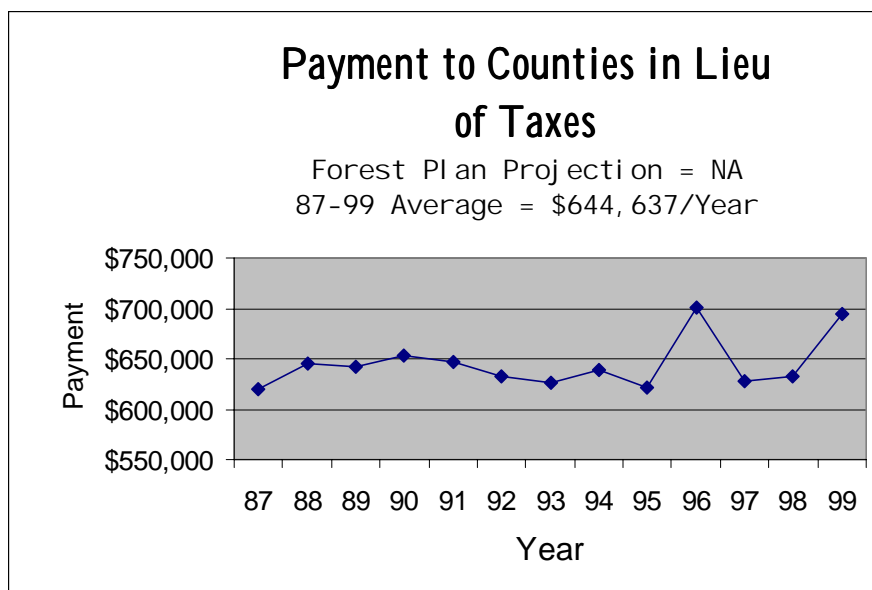
Outputs for 25% funds and PILT were not projected during Forest planning. As the following shows, overall, 25% fund payments have increased over time. The average payment between 1987 and 1999 was \$1,179,901.

Figure 3. Twenty-five Percent Funds to States between 1987 and 1999.



The average PILT for 1987 and 1999 was \$644,637.

Figure 4. PILT to Counties between 1987 and 1999.



*FY99 information is an estimate that has not been validated to ensure only National Forest System figures are counted. This information will be updated as soon as it is available.

What was accomplished in 1999?

The Forest's total expenditures in 1999 were just over 10 Million (this includes NFS funds as well as other funds). The following displays the dollars expended for various programs.

Figure 5: Forest Expenditures in FY 1999 (NFS and Other Dollars).

PROGRAM	DOLLARS
Minerals	439,548
Range	83,273
Land Use	205,689
Wildlife/Fish	585,293
Timber	1,828,463
Soil/Water	606,668
Property Survey	136,191
Fire	205,490
Recreation Operations and Maintenance	1,405,861
Road Construction and Reconstruction	2,655,454
Road/Trail Maintenance	145,115
Facility Operation Maintenance	144,879
Senior Citizen Service Employment Program	481,477
Cooperative Law/Drug Enforcement	73,466
Land and Water Conservation Fund	83,324
Highway Transportation Administration	9,861
Ecosystem Management	5,229
Administration	1,021,141
TOTAL EXPENDITURES	10,116,422

As Figure 6 indicates, the Forest's income for FY 1999 was \$7,377,000.

Figure 6: Forest Receipts in FY 1999.

PROGRAM	DOLLARS
Timber	\$4,798,000
Grazing	\$16,000
Land Uses	\$50,000
Rec Sp Uses	\$0
Power	\$0
Minerals	\$278,000
Rec User Fees	\$87,000
KV	\$1,260,000
Timber Pur Roads	\$888,000
Salvage Sale	\$0
Total	\$7,377,000

Timber receipts account for 65% of the Forest's 1999 income. Though the overall trend of payments to counties over the last 10-15 years has been steadily increasing with few deviations, 25% funds dropped slightly in FY 1999 to \$1,774,827. 1999 PILT is estimated to be about \$694,000; but this has not been validated yet.

What are the future trends and direction?

The *Forest Plan* projected that the Forest's budget would increase slightly over time (7.2 MM in 2001 to 7.9MM in 2030). If past trends are any indication, future NFS budgets are not likely to meet Plan projections. Based on the best information available now, future budgets are likely to remain below \$6.0 million.

Dollars generated from timber harvesting activities are not expected to increase noticeably, and may decline if timber harvesting continues to decline. Dollars generated from minerals and recreation activities may increase over time if demand for these activities continues. As in recent years, 25% Payments to States and PILT are expected to remain stable or increase somewhat.

FIREWOOD CUTTING

What did the Plan say?

Firewood availability was an issue at the time the *Forest Plan* was developed (FEIS, pp. 1-8 and A-27; Forest Plan, p. 26). This concern was addressed during Plan development by establishing firewood standards and guidelines (Forest Plan, pp. 76, 158, and 174).

What has been monitored?

No projection was made as to the cords of firewood that should be made available, but the Forest monitors firewood availability by tracking the number of permits issued each year.

What was accomplished in 1999?

In FY 1999, as in previous years, 400-500 firewood permits were issued. These permits authorize the removal of 800-1000 cords of dead and/or down trees annually.

What are the future trends and direction?

Future outputs are likely to be similar, since availability of, and demand for firewood is likely to remain stable.

FISHERIES PROGRAM MANAGEMENT

What did the Plan say?

Watershed protection was an issue during Forest planning, but fisheries management was not a driving issue (FEIS, pp. 1-8, 3-20, 4-3, 4-18, and 4-21). In June 1991, the *Forest Plan* was amended to establish specific fish management standards (Forest Plan, pp. 63-64a, 82a-83a, 124-124a, 137-138a, 150-150a, 158a, 179-179a, 188-188b, 195-195a, 203-203a, and R-7-R7a). Pages 257a-257b of the Plan outlined monitoring to be done:

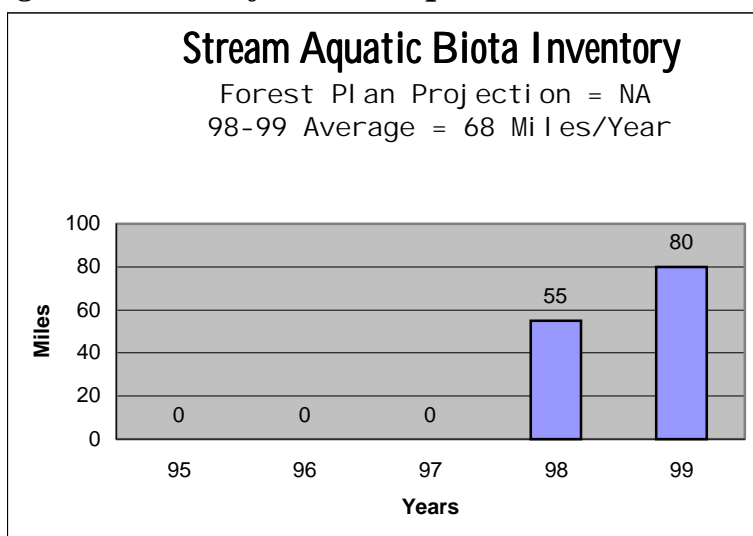
1. Annually measure miles of acidic streams to assess effects of stream acidification and acid deposition;
2. Annually monitor individual comments to determine if –
 - Problems exist with too much or too little access;
 - Projects are being used to provide opportunities for physically challenged persons; and
 - There is a wide enough range of experiences for fishing.
3. Annually monitor individual comments and habitat needs assessments to determine if enough warm water fisheries opportunities are available;
4. Review research to determine feasible technology to improve water chemistry for fish production; and
5. Annually monitor individual comments and stream surveys to determine if trout stocking is causing problems with Native or Wild trout, user conflicts, or dispersion of users.

What has been monitored?

The *Forest Plan* projected that between 1986 and 2000 an average of 147 fish structures per year would be provided to improve fish habitat (Forest Plan, p. 41). The Forest continues to implement projects to improve fish habitat; however, over time, the Forest's fisheries program emphasis has been shifting away from fish structure construction to a more holistic approach to watershed and fisheries management.

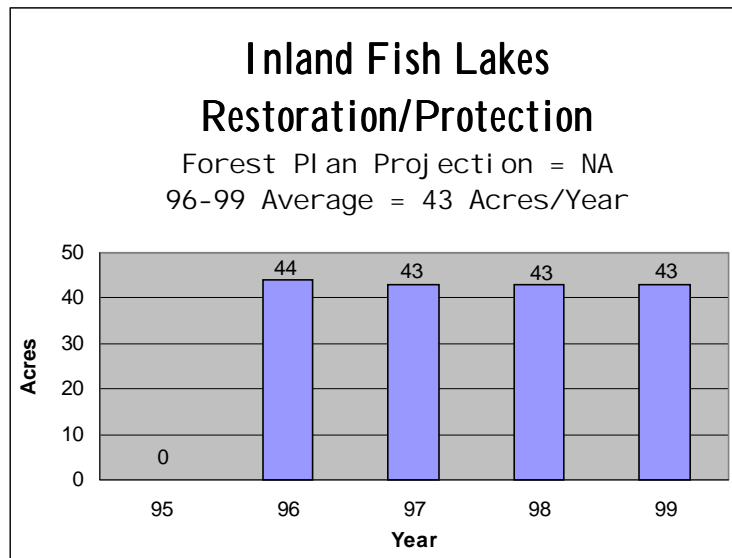
In regards to monitoring, the WV Division of Natural Resources has sampled acidic streams (see Performance Report WV Acid Water Studies, Technical Bulletin 99-4). Both WV DNR and the Forest conduct stream surveys to assess fish populations and habitat conditions, but neither conduct surveys specifically designed to solicit angler comments. The Forest conducts project level analyses for multiple resources in which anglers can, and do, comment on fisheries issues; however, comments received during these analyses have not been systematically assessed in relationship with the monitoring items. Figure 7-9 display the items that are tracked:

Figure 7: Miles of Stream Aquatic Biota Inventoried.



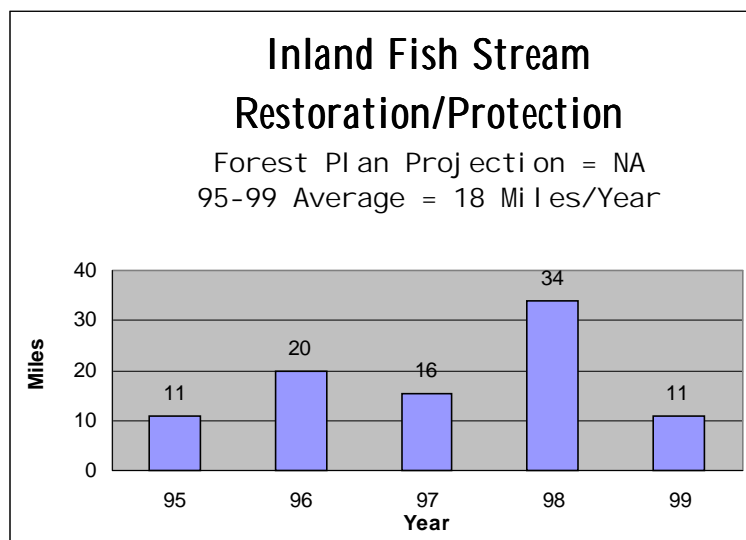
*This item was not tracked until 1998, thus no data exist for 95-97.

Figure 8: Acres of Inland Fish Lakes Restored/Protected.



* Data were not reported in 1995.

Figure 9: Miles of Inland Fish Streams Restored/Protected Since 1995.



What was accomplished in 1999?

In FY 1999, the following were accomplished:

1. Began a landscape/watershed scale assessment of the Upper Shavers Fork River;
2. Inventoried 80 miles of stream aquatic biota, covering approximately 50 streams across the Forest (primarily fish and sediment sampling);
3. Restored 43 acres of inland fish lakes by liming Summit Lake to help reduce its acidity;
4. Restored 11 miles of inland fish streams by adding limestone fines to Glade and Buck Runs of the Shavers Fork River; and
5. Worked with partners such as the WV Division of Natural Resources and WV Trout Unlimited to sponsor local fishing derbies.

What are the future trends and direction?

In the past, the Forest's fisheries program focused on installing fish structures to increase habitat complexity and spawning and rearing potential. The Plan anticipated that fish structures would remain at 100 structures per year (Forest Plan, Appendix O-1). However, actual outputs are expected to continue to decline, and be limited to areas where Knudsen-Vanderberg dollars (generated from timber sales) or partnership funds can be used.

In recent years, the fisheries program has focused on aquatic habitat classification and stream inventories and monitoring. This focus is expected to continue in the foreseeable future. Riparian protection, natural large wood recruitment for habitat restoration and maintenance, and watershed health will continue to be emphasized. Also, road standards and timber harvesting methods will continue to be adapted to be more sensitive to watershed conditions; and watershed restoration projects (such as the abandonment of old woods roads or the conversion of system roads to trails) are expected to increase as funding becomes available.

Past and future water quality improvements will continue to center around WV DNR's liming of acidic streams. WV DNR operates drums on the North Fork Cranberry River, Dogway Fork of Cranberry River, and Otter Creek. About 125 miles of stream are treated annually via these drums or direct limestone-fine additions.

GYPSY MOTH

What did the Plan say?

Although gypsy moth defoliation was not identified as a specific concern during Forest planning, insect protection was considered as part of the fire, insect, and disease issue and chemical use issue (Forest Plan, pp. 27-28). Forest-wide standards and guidelines were developed for pesticide use, management, and coordination (Forest Plan, pp. 58-59, 92, and 160). Page 251 of the Plan provides for monitoring to determine the extent and severity of insect occurrence and ensure destructive insects do not increase to potentially damaging levels.

What has been monitored?

Gypsy moth defoliation became an issue to track when significant gypsy moth defoliation occurred on the Forest in 1990. This defoliation continued through 1995, until major epizootics contributed to its widespread collapse in 1996.

During the infestation period, an average of approximately 10,000 acres per year were treated. In 1990 and 1991, Dimilin (a synthetic pesticide) was used to kill moths and butterflies in the order Lepidoptera. Since then, only biological insecticides have been sprayed on Monongahela lands. From 1992 to 1995, 32,596 total acres were treated aerially. *B.t.* (a biological pesticide that also kills moth and butterfly caterpillars in the order Lepidoptera) was sprayed on 17,425 acres (53% of treated lands); Gypchek, a biological pesticide specific to gypsy moths, was used on 15,171 acres (47% of treated lands).

A 10-year, non-target study was initiated in 1994 to complete the following:

- Collect baseline data on Lepidoptera, other herbivorous, predacious and parasitic arthropods, songbirds, and salamanders in plots that represent forest types vulnerable to gypsy moth.
- Evaluate the effects of multiple, but not more than 3, applications of *B.t.* and Gypchek, from 1997-2001.
- Identify the best indicator communities or species among arthropods for evaluation of *B.t.*

Nine, 500-acre plots on the Greenbrier and Marlinton Districts have been established for this study. Three plots were treated with *B.t.* and three with Gypchek in 1997 and 1998. The remaining three plots are controls and are not treated.

What was accomplished in 1999?

In 1999, no defoliation was detected, and no treatment was initiated. As in recent years, the fungus *Entomophaga maimaiga* continued to hold gypsy moth populations to low levels. Consequently, only the study sites previously mentioned have been treated since 1995. However, scattered pockets of gypsy moths were recorded on the MNF in 1999. Several areas had increasing egg mass populations. Egg masses were detected in the vicinity of Lockridge and Sherwood Lake. The State agreed to conduct detailed surveys in those areas.

What are the future trends and direction?

Forest philosophy concerning gypsy moth defoliation is to treat only those areas where defoliation effects would make achieving management objectives difficult. For example, where the management objective is to provide developed recreation opportunities, much lower populations may be treated than in the general forest. Blanket treatment of all areas is not done. Future treatment would be proposed only if gypsy moth populations dramatically increased.

HERITAGE RESOURCES

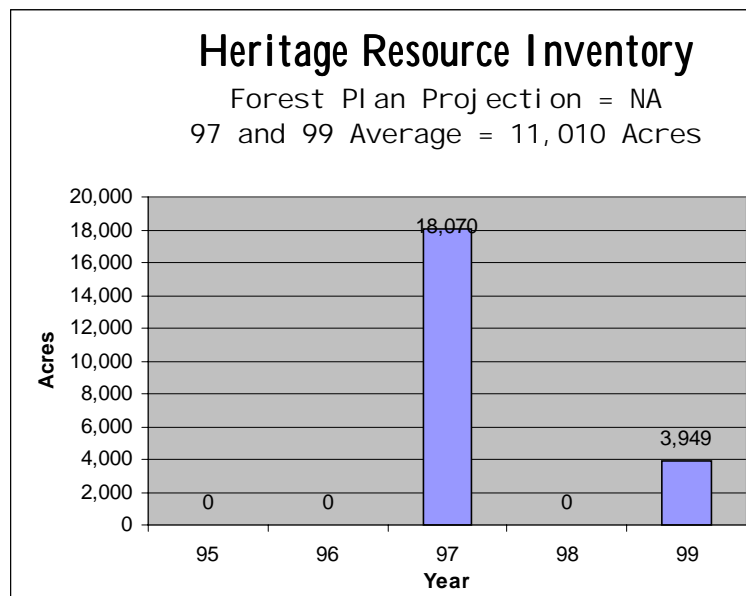
What did the Plan say?

Cultural resources were a concern during *Forest Plan* development (FEIS, pp. 1-8 and A-27; Forest Plan, pp. 26-27). Standards and guidelines were identified to ensure their protection and, if appropriate, encourage their enhancement and interpretation (Forest Plan, pp. 49, 70, 157, 186, 193, 203, 206, and Appendix Q).

What has been monitored?

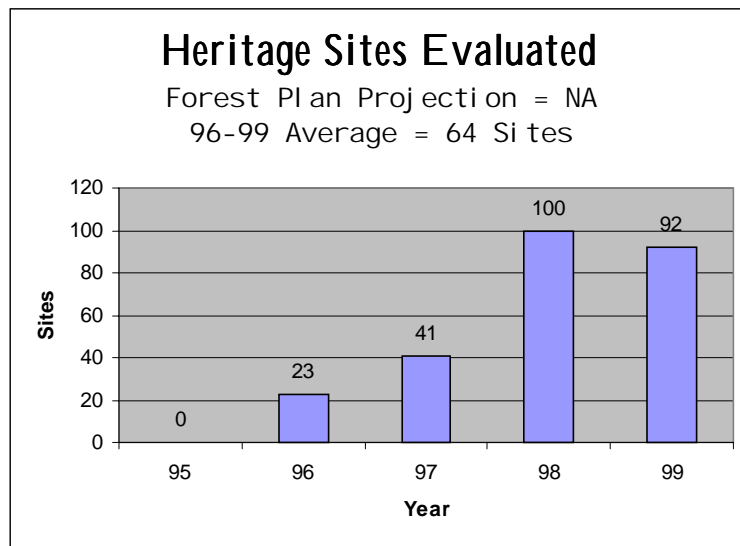
Specific annual accomplishments were not projected for cultural resources; but page 260 of the *Forest Plan* provided for the annual monitoring of the number of cultural resource sites that are identified, evaluated, and protected. The following figures display accomplishments in recent years:

Figure 10: Acres of Heritage Resources Inventoried.



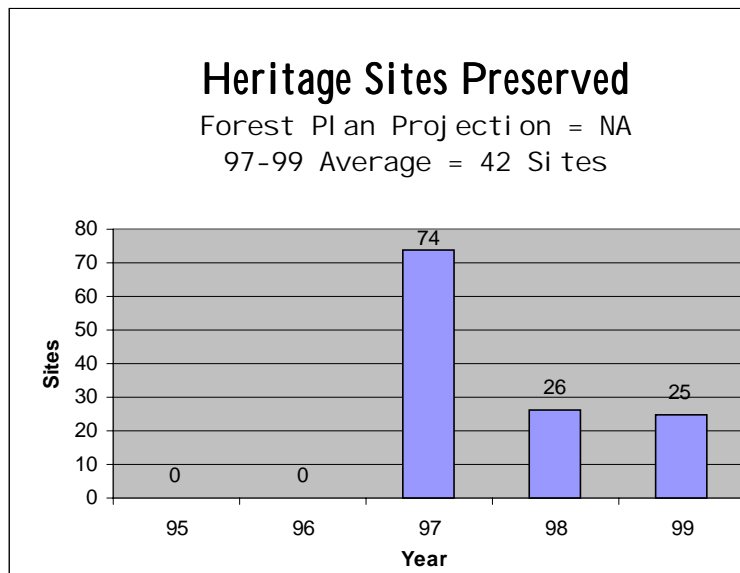
* Data were not reported for 1995, 1996, & 1998, thus average is based only on 97 & 99 data.

Figure 11: Number of Heritage Resource Sites Evaluated.



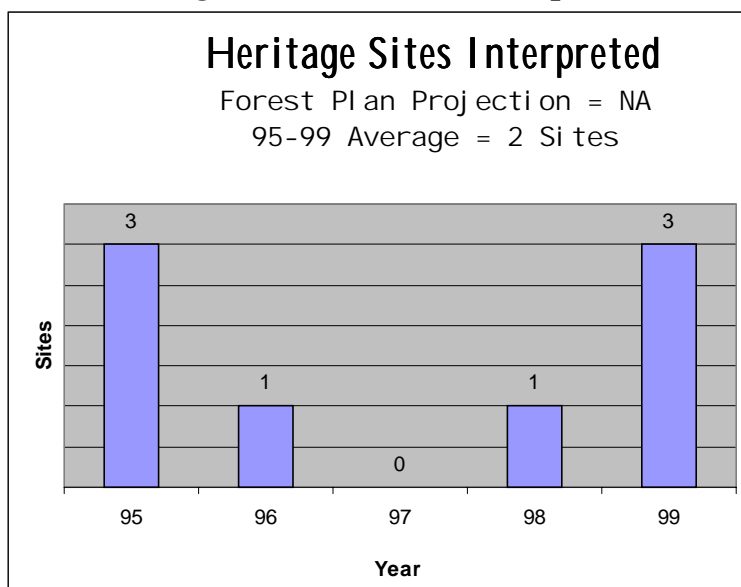
* Data were not reported for 1995.

Figure 12: Heritage Resources Sites Preserved.



Data were not reported for 1995 and 1996, thus average is based on 97-99.

Figure 13: Heritage Resource Sites Interpreted Since 1995.



* Data were not reported in 1997, thus average is based on 4 years.

What was accomplished in 1999?

The Heritage program provides support services to other forest functions as well as public service activities. As the previous bar graphs show, the following were accomplished in FY 99:

1. Heritage resource surveys were conducted on 3,949 acres;
2. Ninety-two heritage sites were evaluated;
3. Twenty-five sites were preserved/protected; and
4. Three sites were interpreted.

What are the future trends and direction?

Future heritage resource accomplishments are expected to be similar to those of 1999.

LAND ADJUSTMENTS

What did the Plan say?

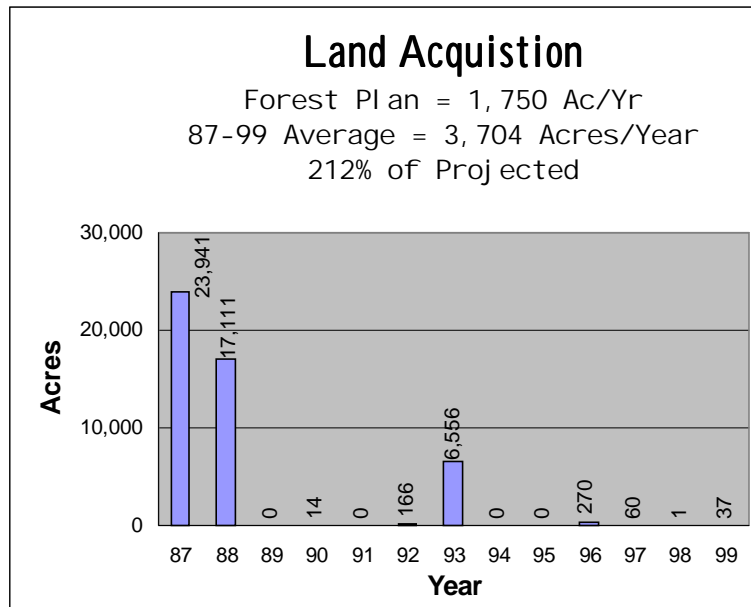
Land/ROW acquisition was an issue during the Forest planning process, especially as it related to the Spruce Knob-Seneca Rocks National Recreation Area (NRA)(FEIS, pp. 1-8, A-26, and A-35). Standards and guidelines on pages 94-96, 113, 161, 181, 190, 196, 204, and 209 were developed to address this issue.

What has been monitored?

The *Forest Plan* projected, that between 1986 and 2000, an average of 1750 acres of land throughout the Forest would be acquired each year, and that 325 acres would be acquired for the NRA (Forest Plan, p. 42). Other types of land adjustments (such as land exchanges, donations, Small Tracts Act sales/interchanges, transfers, etc.) are also completed on the Forest, but the *Forest Plan* did not make output projections for them.

Acreages acquired or exchanged vary substantially year to year. No land, or very little, may be acquired or adjusted some years; while other years, large acreages are purchased. The following displays the land accomplishments since 1987.

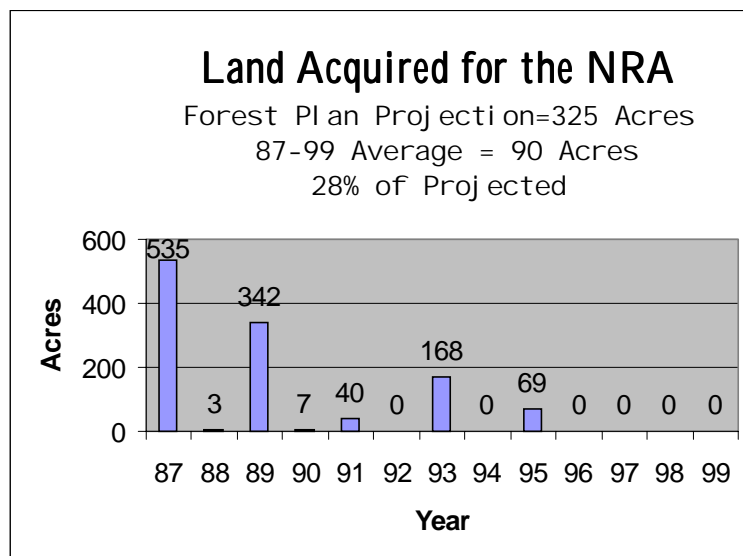
Figure 14: Acres of Land Acquired (Excluding NRA Purchases) from 1987 to 1999.



A total of 48,156 acres were purchased across the Forest from 1987-1999 (*this includes donations, but does not include minerals underlying USA surface acres or NRA acres). Extremely larger than normal purchases occurred in 1987, 1988, and 1993. In typical years, an average of 55 acres were purchased annually, or 3% of what the Plan projected.

Since 1987, about 1,164 acres have been purchased for the NRA. As the following figure indicates, an average of 90 acres have been purchased annually (28% of what the Plan projected). As projected, acquisitions for the NRA have been declining over the years. In the last four years, no land has been acquired for the NRA.

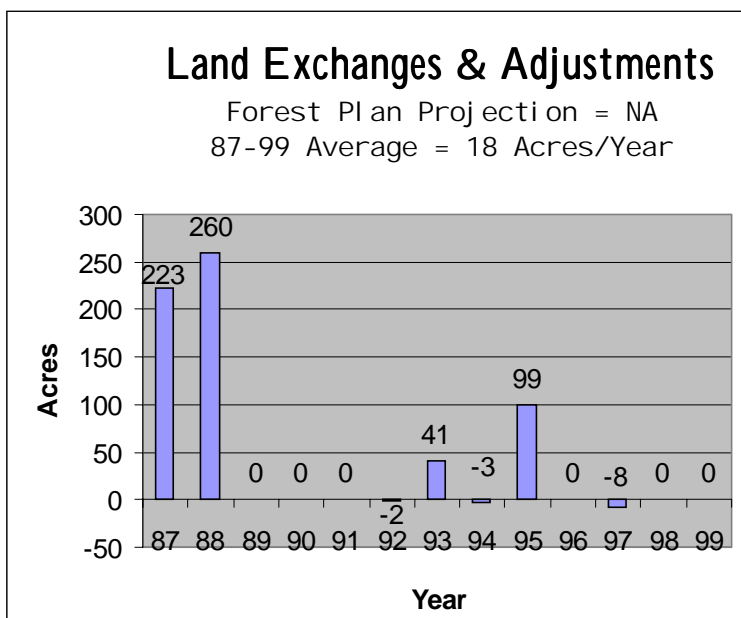
Figure 15. Acres of Land Acquired for the NRA between 1987 and 1999.



Historically, exchanges have been a very minor component of landownership adjustments, with about 1,000 acres involved over the same 12 years. Exchanges usually result in little net change to Forest acreage. The primary reason for exchanges is to obtain privately owned land located within otherwise-large blocks of Monongahela land. Typically, the private land is surrounded by National Forest System lands on two to four

sides. Similarly, acreages of National Forest surrounded by private lands are traded away during exchanges. For both acquisitions and exchanges, other considerations include protection of rare species and their habitats, heritage resources, riparian areas, and/or other unique resources. The following displays the acres gained or lost annually as a result of land adjustments since 1987.

Figure 16. Acres of Land Adjustments (Excludes Purchases) between 1987 and 1999.



What was accomplished in 1999?

No land was exchanged in FY 1999, but 37 acres were acquired for their heritage resource value (Kincaid property).

What are the future trends and direction?

The *Forest Plan* projected that land acquisition would decrease over time, and that NRA acquisition would cease (Forest Plan 42 and Appendix O-2). Recent trends are consistent with *Forest Plan* expectations.

Future land adjustments are difficult to project. Funding for lands projects has been declining noticeably over the past few years. Future land acquisitions are likely to be limited, ranging from 20-200 acres per year with infrequent larger acquisitions.

LANDLINE LOCATION & MAINTENANCE

What did the Plan say?

During *Forest Plan* development, landline location/maintenance was an issue (FEIS, p. 1-8 and A-28; Forest Plan, p. 27). Specifically, there was a concern that landline maintenance was not occurring at a rate equal to line deterioration and that funding was not adequate to keep up with needs (FEIS A-28). Standards and guidelines were developed in the *Forest Plan* to address landline concerns (Forest Plan, pp. 96 and 162).

What has been monitored?

Landlines are generally surveyed, marked, and posted in support of resource activities or to resolve claims and encroachments on National Forest System lands. The *Forest Plan* projected that between 1986 and 2000 an average of 52 miles of new landline would be surveyed each year and 91 miles of landline maintenance would be accomplished (Forest Plan, p. 42). The following graphs display actual accomplishments over the years:

Figure 17: Landline Location Accomplishments from 1987 thru 1999.

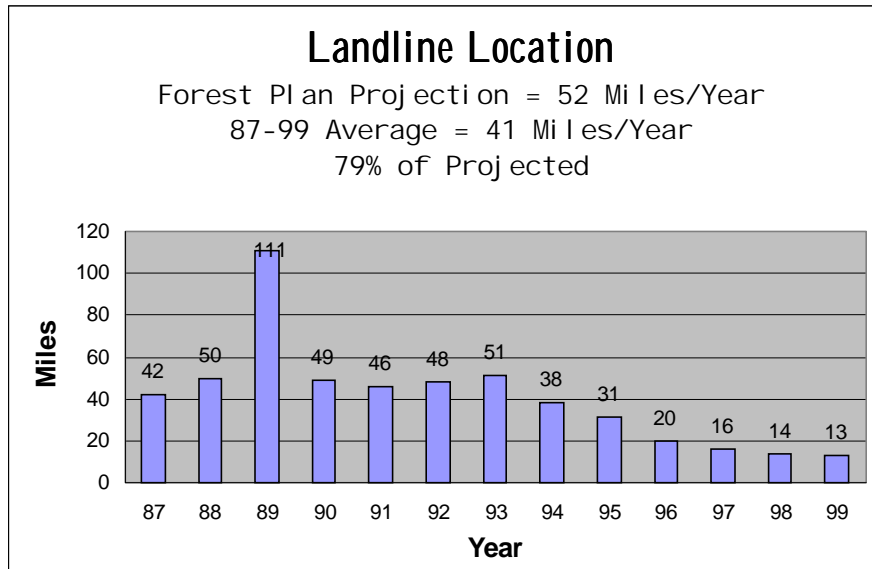
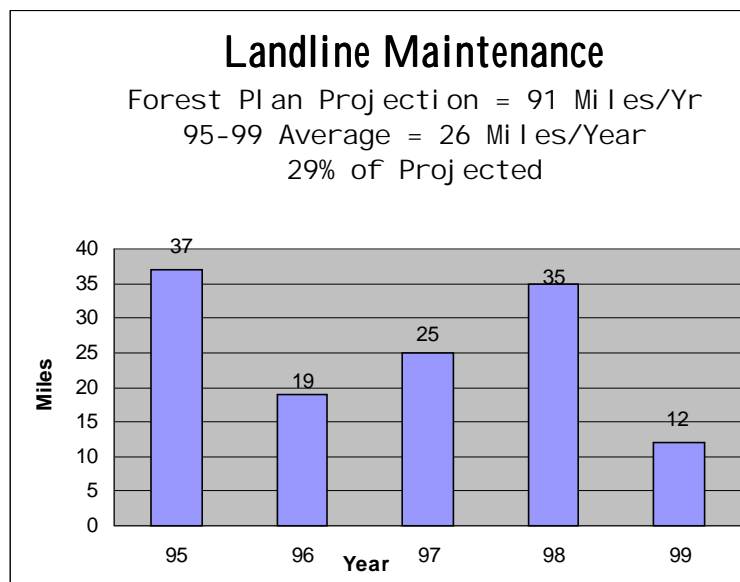


Figure 18: Landline Maintenance Accomplishments Since 1995.



What was accomplished in 1999?

As in previous years, FY 1999 landline accomplishments were well below Plan projections. Only 13 miles of new boundary were marked; and only 12 miles of the Forest's 2500 miles of landlines were maintained. This is approximately 10% of what needs to be accomplished to prevent from losing established landlines.

What are the future trends and direction?

The *Forest Plan* projected that landline location would remain stable over time and that landline maintenance would increase (pp. 42 and Appendix O-2). Inadequate funding has limited landline accomplishments. As the graphs show, landline location has remained low over recent years, and landline maintenance has fluctuated. Currently, only half of the Forest's landlines are marked to FSM 7150 standard. Funding in this area is expected to remain low, making it difficult to annually maintain the miles of landline that are necessary to meet *Forest Plan* standards (*Forest Plan*, p. 96).

MINERALS

What did the Plan say?

Mineral exploration and development was addressed as Problem #1 during Forest planning (FEIS i, 1-8, 1-10, A-26 and A-33; Forest Plan, p. 17). It was addressed by -- allocating land; leasing various amounts of U.S. coal rights; and developing standards and guidelines. The minerals problem was further addressed in 1992, when a *Forest Plan* amendment was completed (Forest Plan, pp. 50, 90-91, 113, 125, 138a-139, 150a-151, 159, 180-181, 188b-189, 196, 203a-204, 208-209, Appendix I, and Appendix K). Pages 254-254b outline the following items to be monitored--

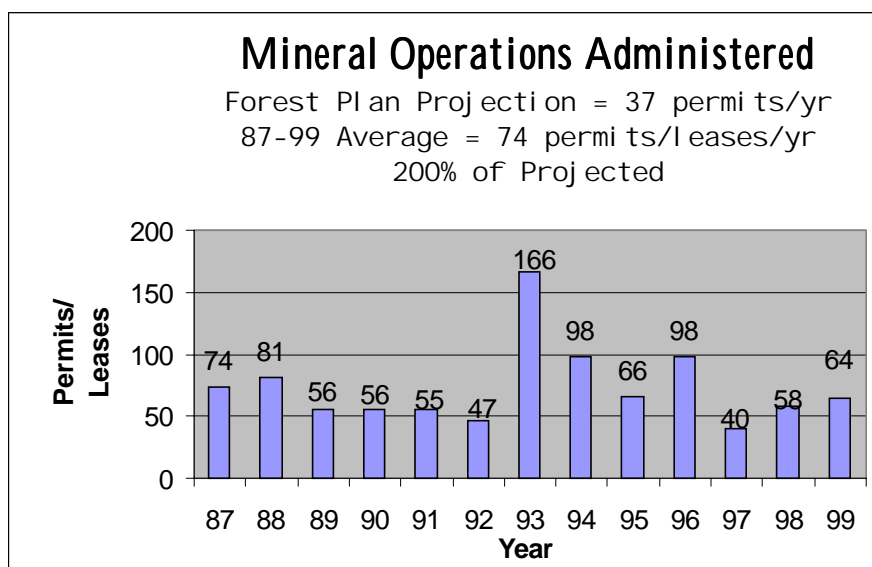
1. Assure minerals are available for exploration and development;
2. Check on environmental effects and ensure compliance with standards, operating plans, and EA's;
3. Determine if standards and guidelines are being properly and consistently applied;
4. Determine if lease terms provide the Forest Service with enough control to protect Forest resources;
5. Determine if the earth disturbance from gas development is occurring as predicted;
6. Determine how much gas development (or combination of gas development, roads, and timber harvesting) changes water quality by measuring turbidity and duration;
7. Determine if the effects on recreation use from noise is as predicted in the EA; and
8. Determine soil loss off of gas well sites.

What has been monitored?

Mineral exploration and development (primarily coal exploration and mining and natural gas exploration and development) have occurred on the MNF since before the current *Forest Plan* was in effect. A *Forest Plan* goal is to make minerals available for exploration and development consistent with other appropriate resource uses and protection of the environment (p. 37).

One of the ways the Forest planned to track progress toward this goal was to track mineral leases and permit outputs. The Plan projected that an average of 37 mineral permits/leases would be in effect annually. However, what the Forest actually reported over time was the number of mineral leases and operations administered. The following displays the number of mineral leases and operations administered annually since 1987.

Figure 19: Permits/Leases of Mineral Operations Administered from 1987 to 1999.



The fluctuation in the number of mineral operations administered over this period may be due to –

- 1) Fluctuation in the amount of mineral activity (for example, some years have more walk-in mineral business than other years);
- 2) Budget which determines what proportion of mineral operations are to be administered in any one year (for example, over the last 5 years between 60% and 100% of the active mineral operations on the Forest have been administered in any one year); and
- 3) Changes in policy that change how one reports mineral operations administered (for example, the Forest no longer reports its issuance of a lease as a lease administered).

Another mineral output the Forest chose to track over time is mineral receipt returns to the U.S. Treasury. Approximately 25% of these returns are distributed to West Virginia counties containing Monongahela National Forest land. Oil and gas lease rents and royalty payments are the primary source of those returns. These returns declined substantially over the years. As leases expired, so did rental payments. Royalty payments also declined because gas prices dropped in the early 1990s and existing wells produced less gas as they aged. The decline in returns, however, is leveling. This leveling is occurring because, even though less federal gas acreage is under lease, gas production has increased (especially from the gas produced from the Horton field since the completion of the Thornwood Gas pipeline in 1996).

Monitoring during the period since 1987 has examined other aspects of the Forest's performance toward meeting the goal of making federal minerals available for exploration and development:

- 1) Federal minerals' availability for **exploration** activities that would not require a mineral lease (such as seismic exploration) has remained steady through the period.
- 2) Federal minerals' availability for **development** activity has fluctuated throughout the period. Decreases in federal gas available for development occurred in the late eighties and early nineties because lands were unavailable for leasing until the *Forest Plan* amendment addressing oil and gas leasing and development was completed in 1992. Since then, about 75% of the federal gas has been available for development.

Little interest has been exhibited for federal coal, so its availability has not been monitored.

Monitoring has also addressed mineral activities' consistency with other resource uses and protection of the environment. Selected mineral operations have been reviewed on the ground for environmental effects, and compliance with the Decision authorizing the mineral operation, standards and guidelines, and operating plans:

1. During the period since 1987, operating underground **coal mines**, which were extracting privately owned coal beneath National Forest land, were monitored. Currently, no coal mining operations are actively removing coal on Monongahela National Forest land.
2. **Gas operations** have also been monitored. Where instances of non-compliance have occurred, they have been corrected. Monitoring has suggested adjustments to implementation to improve protection of Forest resources (Forest Plan Monitoring, mineral reports 1987, 1988, 1989, 1991, 1992, 1993-1994, Inspection reports 1995-1999).

When the opportunity presents itself, monitoring is conducted to determine if standards and guidelines are being properly and consistently applied (item 3 above); lease terms provide the Forest Service with enough control to

protect Forest resources (item 4 above); and earth disturbance from gas development is occurring as predicted (item 5 above).

For example, as part of site specific analysis associated with review of proposed mineral operations, the mineral operation proposed is compared to Forest Plan standards and guidelines, as was done in the Thornwood Gas Pipeline analysis in 1995-96 (See Thornwood Gas Pipeline EA, Sept 1995; Decision 3/96).

Whether or not lease terms provide the Forest Service with enough control to protect Forest resources is determined by the amount of conflict in terms of appeals and litigation between the lessee and Forest Service over the lessee's development rights versus Forest resource protection requirements. There have been no irresolvable conflicts; therefore, lease terms appear to be sufficient to provide for protection of Forest resources.

The amount of earth disturbance associated with gas development, and whether that amount is occurring as predicted, has been reviewed and documented as part of site-specific environmental analyses on proposed mineral operations (Thornwood Gas Pipeline EA, Sept 1995, pp. 29-31; Cabot Oil and Gas Corporation Gas Wells Proposal EA [for wells MNF #1 and 2], 1997, pp. 24-25). These project analyses indicate, and increased use of directional or "slant" drilling technologies help ensure, that earth disturbance from gas development is less than amounts predicted (1950/2820 memo dated January 21, 1998 to Forest Supervisor from 5 member Interdisciplinary Team).

Determining changes in water quality from gas development, roads, and timber harvesting separately has been done in Old House Run and Vance Run (1993-1997); but not in combination due to lack of opportunity to look at them before and after the implementation of activities in combination.

There has been no documentation of complaints from recreationists regarding noise from gas development.

There have been no suitable opportunities to document soil transportation from disturbed gas well sites.

What was accomplished in 1999?

In 1999, there were 84 active energy mineral operations on the Forest. Sixty-four of these operations (or 76%) were administered to a standard that ensures compliance with approved operating plans (see Inspection Reports).

Mineral receipt returns to the U.S. Treasury from oil and gas lease rent and royalties, including those from the Gladly Gas Storage field were about \$278,000.

What are the future trends and direction?

The 1986 *Forest Plan* projected an increase in mineral leases and permits from 33 to 51 over time (Forest Plan, p. 42 and Appendix O-2). Although the numbers have changed in part due to the way things are counted, 33 to 51 represents a 50-60% increase. The number of active mineral operations on the Forest since 1987 has not increased overall by 50-60%.

The Monongahela does not foresee near-term significant coal mine development because coal reserves are scattered and would be costly to develop due to the geologies involved. However, there are plans to restore certain lands that have been impacted by past coal mining.

The Gladly Gas storage field operation will continue with maintenance and updating of existing approved facilities; but no plans for future expansion are anticipated at this time.

With increasing natural gas prices, gas leasing and development is expected to continue; it is likely to be focused in certain areas of the Forest, particularly the northern half of the Forest. The *Forest Plan* amendment

on oil and gas leasing and development projected environmental effects based on reasonably foreseeable gas development. Development has occurred at a slower rate than predicted. In addition, recent advances in directional drilling technology and local gas developers' willingness to use directional drilling, indicates that fewer well sites and associated roads and pipelines may be required to drill the same number of gas wells (as operators may attempt to drill several wells from one location). For these reasons, anticipated gas development is still expected to be within predicted levels, even with recent increased interests in Forest natural gas.

PREScribed FIRE MANAGEMENT

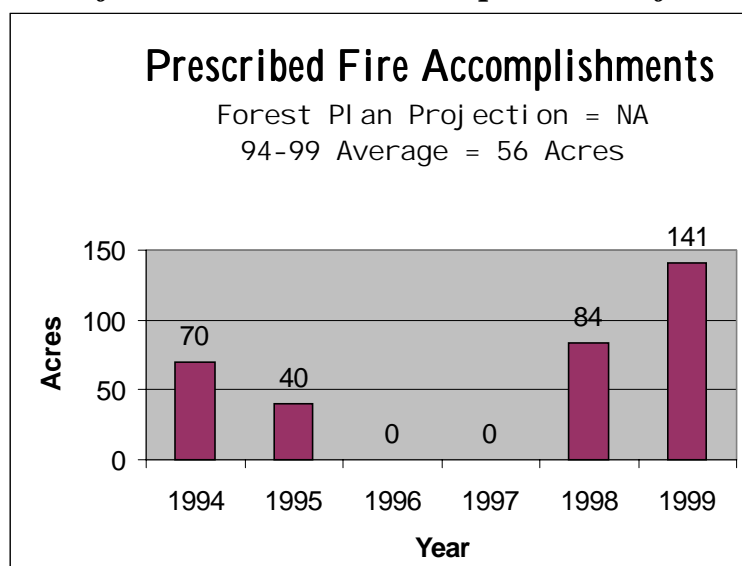
What did the Plan say?

Prescribed fire was addressed as an issue in the *FEIS* (p. 1-8 and A-28; Forest Plan, p. 28). Standards and guidelines were developed to respond to this issue (Forest Plan, pp. 125, 139, 151, 160-161, 181, 196, 204, and 209).

What has been monitored?

No annual accomplishments were projected during Forest planning. Historically, prescribed burning on the Forest has involved burning a few grassy/herbaceous openings for wildlife habitat improvement. The following graph displays the prescribed fire accomplishments since 1994.

Figure 20: Acres of Prescribed Fire Accomplishments from 1994 to 1999.



What was accomplished in 1999?

In 1999, approximately 141 acres of the Beulah Savannah and Lockridge Opportunity Area were burned to improve wildlife habitat and reduce fuel loads.

What are the future trends and direction?

Oak-hickory forest types are fire dependent. Historic records suggest the use of fire by Native Americans in Virginia goes back over 9000 years. The use of fire was so extensive that the main fuel burned was grass. Grassland in Virginia and West Virginia rapidly succeeds to forest unless maintained by grazing, mowing, or fire. Research strongly suggests that reintroducing fire can improve efforts to restore the oak component on good quality sites. Currently, about one-third of the Forest is likely to have some degree of fire dependency.

The Forest's prescribed burning program likely will be expanding in the future to include burns to stimulate oak regeneration, restore ecosystems, reduce fuel loading, and improve wildlife habitat. The restoration of oak

ecosystems will likely involve several burns over a period of up to ten to fifteen years. Surveys will be made periodically to assess if, or when, additional treatment is needed. The use of mechanical treatment in conjunction with fire has been successfully used in many parts of the country and could be useful on the Monongahela National Forest under appropriate conditions.

RANGE MANAGEMENT

What did the Plan say?

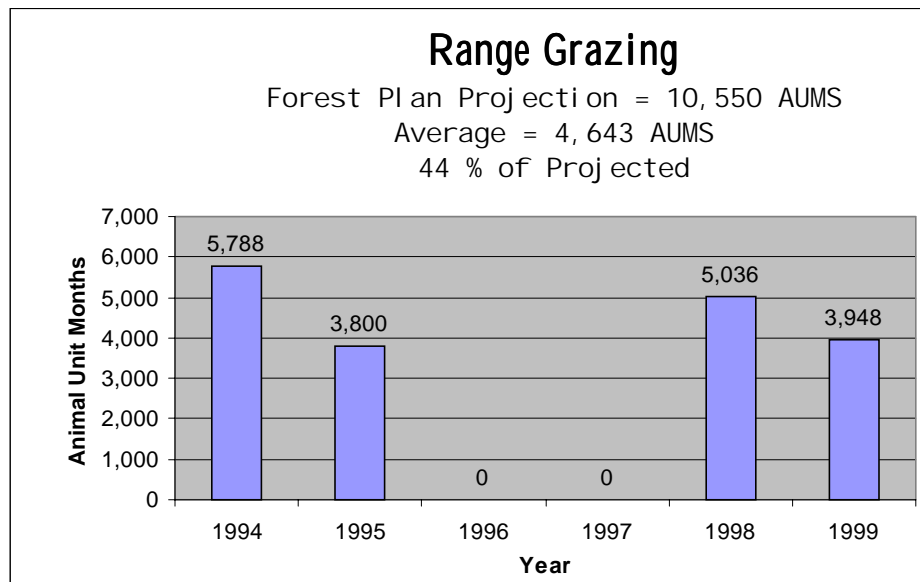
Grazing policies were a concern during Forest planning (FEIS, pp. iii, 1-8, 2-81, A-26, A-38, and B-146). This issue was addressed by allocating land and developing standards and guidelines (Forest Plan, pp. 51, 60-63, 110, 118, 130, 144, 155, 169, 185, 192, 202, and 206).

What has been monitored?

In the past, the MNF has administered up to 52 grazing allotments that comprise approximately 7,000 acres. Each year, some allotments (usually less than 10) are not grazed during the normal May 15 through October 15 grazing season. This may be to rest them and improve forage; for administrative reasons; or because range facilities and/or forage quality are poor and no one bids on them.

The *Forest Plan* projected that between 1986 and 2000 an average of 10,550 Animal Unit Months (AUMs) would be provided on the Forest (Forest Plan, p. 41). The following bar graph summarizes the Forest's range accomplishments from 1994 to 1999.

Figure 21: Animal Unit Months Grazed from 1997 to 1999.



* Data were not reported for 1996 and 1997, thus the annual average is based on 4 years of data.

As the graph shows, the Forest offers less than 50% of the AUMs projected by the *Forest Plan*. There are several reasons for this:

1. Some allotments were not grazed to their full grazing capacity;
2. Some allotments were removed from the grazing program to protect riparian and wetland habitat or because the Forest Service did not have a legal right-of-way for new permittees;
3. Some allotments remained vacant because it was difficult to attract new permittees (e.g. facilities or forage was poor on allotments that were advertised); and

4. Funding has not been available for intensive management such as liming, fertilizing, or brush control. This has resulted in declining forage production, grazing capacity, and AUM production over time.

Although the *Forest Plan* did not project outputs for noxious weed management, the Forest has begun tracking treated acres. An average of 23 acres per year were treated in 1998 and 1999.

What was accomplished in 1999?

In fiscal year 1999, the Forest administered 51 grazing allotments and provided 3,948 AUMs. Nineteen horses, 22 bulls, 40 yearling cattle, and 619 mature cows with calves grazed 43 of these allotments. Eight of the allotments were vacant and not grazed. Drought conditions in the summer of 1999 caused some animals to be removed early due to lack of water and/or forage. Thirty-nine permittees grazed livestock on the allotments and paid grazing fees. Some permittees grazed more than one allotment. The majority of permits were temporary.

The following range improvements were accomplished:

1. Repaired 1995-flood damage to the watering system on the Wratchford Allotment;
2. Relocated the water trough to a more dependable water source location on the Vickers Allotment;
3. Mowed 10 acres of pasture to control invading brush and release forage on the Hoover Allotment;
4. Mowed 15 acres of noxious/invasive weeds on the Mullenax Allotment; and
5. Inventoried existing range improvements on 1/3 of the Forest's allotments. This information was entered into the range "INFRA" database.

What are the future trends and direction?

The Forest's annual AUM accomplishments are not likely to increase to the 13,200 AUMs projected by the Plan (Appendix O-2). They may increase somewhat in the future, if anticipated increases in range funding materializes and improvements can be made to existing allotments. The Forest recently established a "Range Management Specialist" position in 1999, in the hopes of improving efficiency, consistency, and accountability in program management across the Forest.

RECREATION USE

What did the Plan say?

Recreation Standards and Guidelines are found on *Forest Plan* pages: 63-73, 110, 118-119, 130-132, 144-146, 156-158, 169-172, 183-190, 191-197, 202-203, 206-207, and 211. Recreation was addressed in several ways.

The management of the National Recreation Area (NRA) was an issue. The 1969 NRA Management Plan needed revision. Land acquisition in the NRA was controversial. The final Plan addressed these areas by reducing the acres of Priority One land acquisition tracts by 45% (*Forest Plan*, p. 19; FEIS, p. 4-15). The *Forest Plan* also said that developed recreation would take place mostly in the Seneca Rocks area and that large areas of the NRA would be available for semiprimitive nonmotorized (SPNM) recreation opportunities.

Recreation management was addressed in the *Forest Plan* as a Problem. Public involvement showed that most who responded during plan development favored SPNM recreation with more emphasis on dispersed recreation than on developed. In response, the Plan designated 124,900 acres of Management Prescription 6.2 for SPNM.

The Plan Desired Future Condition for recreation is to offer a range of experiences from SPNM to Urban. Within 50 years, 256 developed sites were to be added. The Forest would continue to collect fees. Tent campsites would be rebuilt to more modern standards. Use was expected to double within 50 years. SPNM would be featured over large areas of the Forest and the forest would look natural.

The *Forest Plan* Goal Statement for recreation said that the Forest would manage the spectrum of recreation opportunities with an emphasis on activities that require a large land base and facilities to support that use. By 1999, outputs were expected to be 582,000 Recreation Visitor Days (RVDs) of SPNM use, 818,000 RVDs of semi-primitive motorized and roaded natural use, and 104,000 RVDs of rural use (Forest Plan, p. 41). Monitoring for recreation (which is outlined on pages 254, 255, 257, and 259 of the *Forest Plan*) called for –

1. Annually comparing recreation use estimates with actual use;
2. Annually determining the effects of noise of mineral operations on recreationists;
3. Identifying social conflicts every 10 years;
4. Annually determining if the expectations of visitors are being met and identifying conflicts between users and with other resources uses; and
5. Annually identifying maintenance needs.

What has been monitored?

Inadequate funding for recreation has prevented much of this monitoring from being implemented. There has been no monitoring of the numbers of recreation users, so we are unable to say whether use levels have reached the predicted Plan outputs. Nor are we able to confirm whether the estimates of use in the Plan were accurate. There has been no public comment to the effect that noise from minerals operations has reduced the quality of anyone's recreation experience. Research by the faculty of West Virginia University has shown that there is no conflict between users. This research is dated now, however, and there is some anecdotal evidence that some conflicts between horse, mountain bike, and hiker trail users may be taking place. Under the Meaningful Measures (INFRA) efforts, all facility conditions have been surveyed, and all maintenance needs identified.

What was accomplished in 1999?

No large recreation construction projects have occurred on the Forest since the Seneca Rocks Discovery Center was constructed in 1998. In 1999, the Stuart Recreation Area was put under concession management, in a continuing effort to reduce the Monongahela's dependence on appropriated recreation operation and maintenance funding. Stuart joins Big Bend Campground, Horseshoe Campground, and Seneca Shadow Campground under concession management. In addition, the Monongahela continued to implement the Fee Demonstration Program management of Lake Sherwood Recreation Area, Blue Bend Recreation Area, Day Run and Tea Creek Campgrounds and at Middle Mountain Cabins. Fee Demo allows the Forest to keep most of the fees collected to be used to make improvements on-site.

There are six projects along the Highland Scenic Highway funded by grants through the TEA-21 program, in various stages of design. These include an interpretive orientation facility, a wetland interpretive trail, an accessible fishing facility, an interpretive trail to a geological feature, and interpretive kiosks at the Cranberry Mountain Nature Center and the Gauley District Office. Efforts were also made to initiate the Monongahela Institute (which is intended to be a non-profit partner of the Forest, in association with the Eastern National Forest Interpretive Association) to make the operation and maintenance of the Seneca Rocks Discovery Center and the Cranberry Mountain Nature Center self-sufficient.

What are the future trends and direction?

Future, large-scale developed-recreation site construction is unlikely due to funding constraints and the Plan's emphasis on dispersed recreation. Additional recreation facilities, mostly on the Gauley District, are likely to be placed under Fee Demo management, continuing efforts to reduce dependence on appropriated funds while improving recreation experiences. Also, the Spruce Knob Lake Campground may be placed under concession.

It is likely that recreation research into the numbers of users and visitor characteristics will be funded through West Virginia University in the near future. Meaningful Measures data facilities will be migrated into the Infrastructure database in the future. Also, a Recreation Strategy and Agenda for the Monongahela will be finalized, and the efforts to bring the Monongahela Institute to life will continue.

REFORESTATION

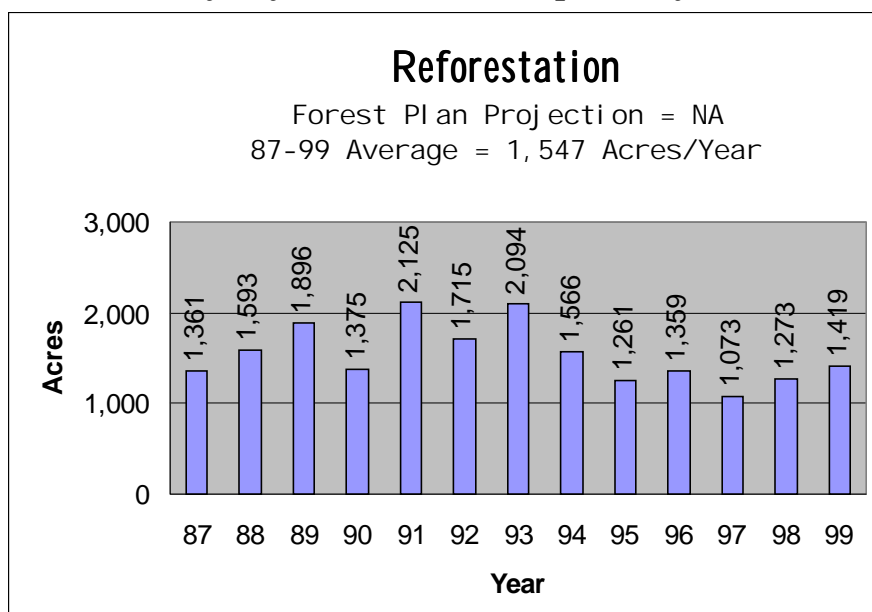
What did the Plan say?

Reforestation, by itself, was not an issue during Forest planning, however, it was a concern raised in regards to the issue of silvicultural practices (FEIS, p. A-36). Several pages of the *Forest Plan* address reforestation guidelines (pp. 77-79, 111, 121-122, 135, 147-148, 158, 176, and 195).

What has been monitored?

The Plan projected that between 1986 and 2000 about 1447 acres of natural regeneration would occur each year as a result of timber management activities. The Plan also recognized that other types of regeneration, such as planting, would occur; but it did not predict outputs (p. 45). The following displays total reforestation trend.

Figure 22: Acres of Reforestation Accomplished from 1987 to 1999.



As the graph shows, total acres reforested have declined over time, primarily because less timber is being harvested than in past years. Note that reforestation includes acres reforested by planting and natural means. This includes site preparation for natural regeneration and certification of natural regeneration without site preparation. Although tree planting is often done to improve the diversity or desirability of species on a site (or for specific wildlife habitat needs), artificial regeneration (planting trees to achieve the minimum tree stocking requirements of the National Forest Management Act) generally occurs on much <5% of the acres regenerated via timber harvest. Per the NFMA, regenerated stands are surveyed for acceptable re-stocking the first and third years after harvest. Surveys are done so that any lack of natural regeneration can be cured by hand planting within a five-year period. Each year, the Forest generally surveys 2500 to 3500 acres for natural regeneration.

What was accomplished in 1999?

In FY 1999, 1,419 acres of reforestation were accomplished.

What are the future trends and direction?

The *Forest Plan* projected that the acres of natural reforestation would increase over time from 1,393 acres to 2,000 acres (Forest Plan, p. 41 and Appendix O-2). This projection was based on the assumption that timber activity would gradually increase over several decades. Since 1995, total acres of reforestation have remained below 1500 acres, primarily because less timber has been harvested than the Plan expected. Future timber

accomplishments are expected to decline or be similar to those of the last few years; therefore, acres of reforestation also are expected to decline or remain stable.

ROAD DEVELOPMENT

What did the Plan say?

The mileage of roads to be built and whether they would be open to public motorized use was a major issue that was addressed as Problem #2 during Forest Plan development (FEIS, pp. ii, vii, 1-8, 1-10, 1-11, A-26, and A-33; Forest Plan, pp. 17-18; ROD, pp. 11-13). The final Plan responded to this issue by allocating land to prescriptions with open or closed roads or assigning different road densities; identifying standards and guidelines; and scheduling a rate of road construction (FEIS, pp. 1-11; Forest Plan, pp. 97-104, 113-114, 125-126, 139-140, 151-152, 163, 181-182, 190, 196-197, 204-204a, 209, Appendix F, and Appendix M). Roads are to be built to the lowest standard possible while still meeting the need and protecting other resources (FEIS, A-33). Also, to protect turkey and bear habitat, almost all new roads will be closed to public motorized travel.

Monitoring was identified to address transportation concerns (Forest Plan, p. 254b-255):

1. Road use controls are to be monitored to determine if road closures are compatible with Plan intent;
2. Road designs are to be evaluated to determine if road plans meet project intent;
3. Road construction projects and maintenance miles are to be monitored to determine if road construction conforms to plans;
4. The validity of road density standards is to be determined by monitoring the miles or road per square mile of management prescription; and
5. The miles of utility or transportation corridors are to be monitored to limit adverse effects.

The *FEIS* stated that miles of system road are expected to remain the same or decline somewhat over time (p. 4-48). It also predicted that as the road system is developed, increasing amounts of the work would be for local roads and reconstruction projects; and when existing routes are replaced, or determined to be unneeded, they will be closed to use and abandoned (FEIS, p. 4-12). “Eighty-three percent of the future road system would have controls on public motorized use” (FEIS, p. 4-20).

What has been monitored?

At the time the *Forest Plan* was approved in 1986, approximately 1,230 miles of roads were inventoried and maintained on the Forest (FEIS 3-6). It was estimated that a total of 3,376 miles of road existed on the Forest (FEIS 3-7; ROD, p. 11). These included system roads (1207 miles), State highways (334 miles), temporary roads (139 miles), railroad grades (468 miles), logging roads (641 miles) and miscellaneous roads (587 miles).

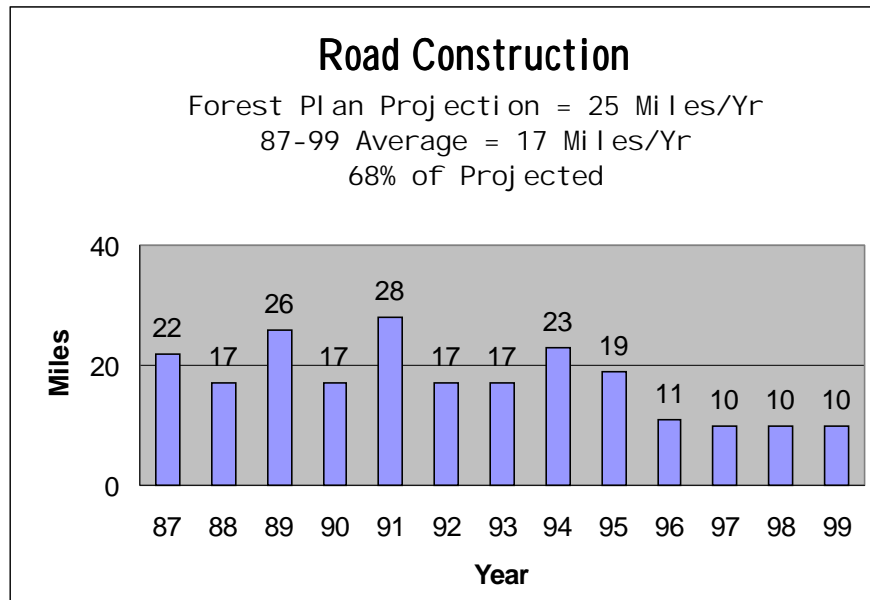
Recently, an extensive road inventory has been conducted, using the global positioning system to locate and record data for Forest roads. This has provided more accurate mileages for known roads and identified roads that weren’t previously inventoried. Today, about 3,665 miles of road are known to exist on the Forest:

1. **System roads** (also referred to as Classified Roads) are designed for decades of use. Today, the Forest manages approximately 1,786 miles of system roads (Forest Infrastructure Database). Of these system roads, 1,096 (61%) are closed to vehicle traffic year round; 538 miles (30%) are open to vehicle traffic year round; and an additional 152 miles (9%) are open seasonally (Forest Infrastructure Database).
2. **Temporary roads** are designed for use during specific projects, and are "put to bed" by installing water bars and seeding the surface after project completion. Temporary roads and woods roads combined are referred to as “Unclassified Roads.” Currently, the Forest has about 1,879 miles of unclassified roads.

3. **Woods roads** are neither system nor temporary roads; they are travel ways in the woods created by past activities (e.g. old logging or mining roads or railroad grades). The canopies over almost all woods roads are closed or nearly closed. Because of area reviews, woods roads have been abandoned, or converted to a trail, wildlife opening, or system road.

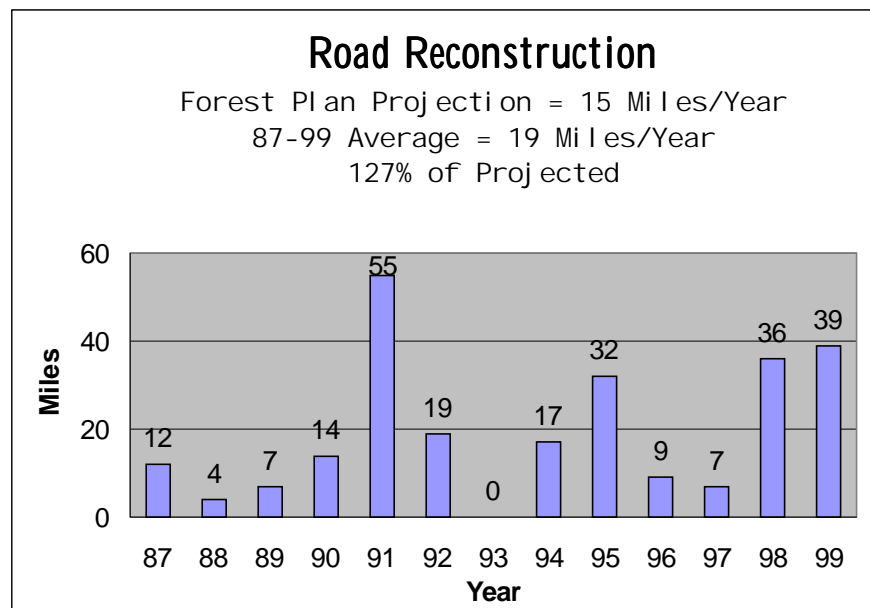
The Plan projected that between 1986 and 2000, 25 miles of road construction, 15 miles of reconstruction, and 8 miles of abandonment would be accomplished each year (p. 42). The following graph shows that road construction has declined since the *Forest Plan* was approved.

Figure 23: Road Construction Accomplishments from 1987 thru 1999.



During the past 5 years, an average of 12 miles of roads per year have been constructed, less than half what was projected by the Plan (Forest Plan, p. 42). As the Figure 24 graph shows, overall, road reconstruction accomplishments have exceeded Plan projections by 127%.

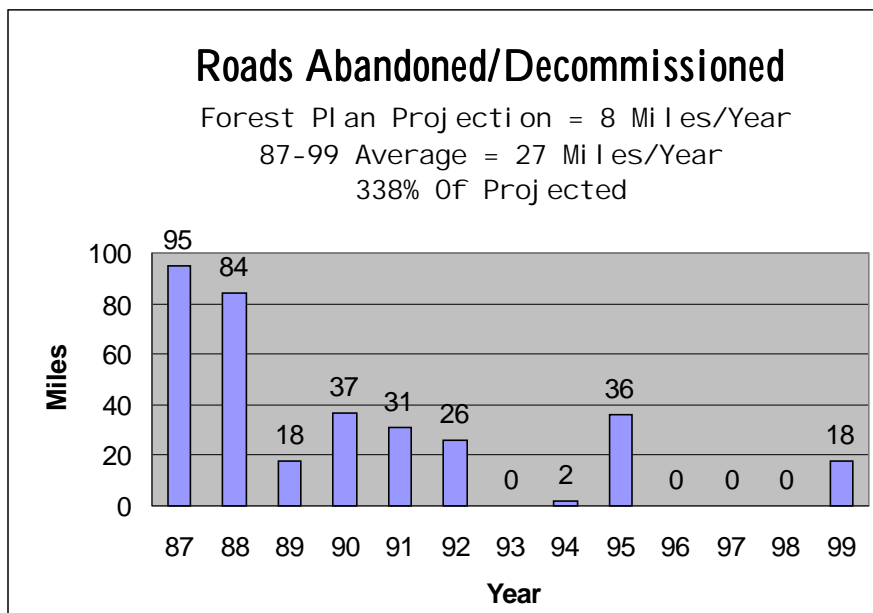
Figure 24: Road Reconstruction Accomplishments from 1987 to 1999.



Road reconstruction fluctuates during any given year. This is partly a result of unanticipated road funding increases during some years and flood restoration activities in fiscal years 1998-1999.

From 1987 to 1999, the Forest abandoned 347 miles of roads (i.e. let them grow up with vegetation or obliterated them).

Figure 25: Roads Abandoned/Decommissioned from 1987 to 1999.



As the graphs show, road abandonment accomplishments exceed Plan projections during most years.

In regards to monitoring outlined on pages 254b-255 of the Plan, road use controls, road densities, and road construction, reconstruction, and abandonment miles are evaluated during opportunity area analyses and project analyses. Road designs are monitored after project implementation to see if they were implemented as planned and to determine if they had the anticipated effects. Overall, miles of road have increased over time, but all remain below *Forest Plan* density standards (Biological Assessment, Appendix 4).

What was accomplished in 1999?

In 1999, 10.3 miles of road were constructed to improve access; 39.3 were reconstructed for improved access or for timber access; and 18.1 were decommissioned. Also, 994 miles of existing system roads were maintained (55.7% of the 1,786 system miles on the Forest).

What are the future trends and direction?

The *Forest Plan* projected that road construction and reconstruction would noticeably decline in the coming decades (O-2). This is consistent with current national and Monongahela road management policies. As previously discussed, road construction has already declined, and road reconstruction is expected to decline once existing roads are brought up to today's standards for protecting watershed resources.

In the future, the Forest will emphasize use and reconstruction of acceptably located roads, rather than constructing new roads. Future construction is not likely to exceed 15 miles per year, and is likely to be less. Road decommissioning is expected to increase in the future as funding for watershed restoration increases. Inadequately designed and maintained roads (which can harm water quality, wildlife habitat, and other ecological values, as well as pose safety hazards to forest users) will be stabilized and restored.

SOIL & WATER IMPROVEMENTS

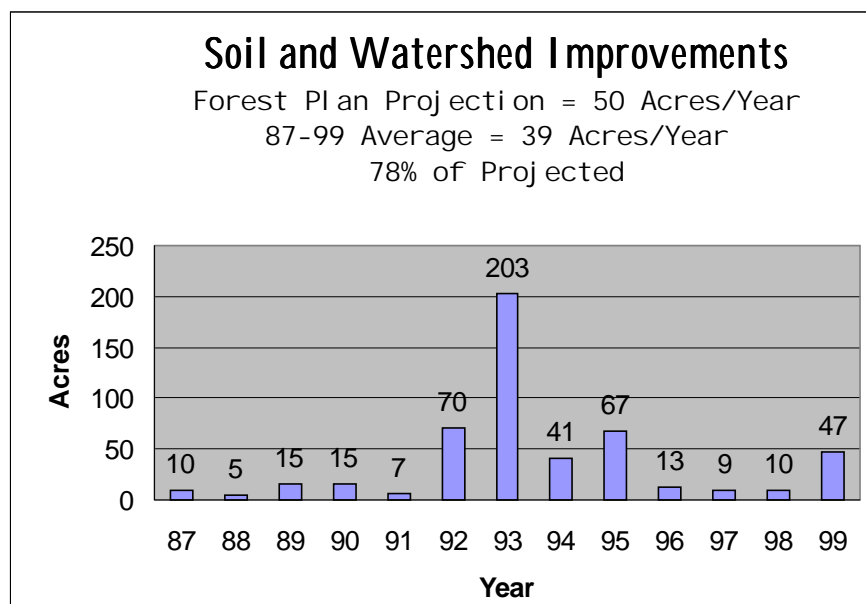
What did the Plan say?

Watershed protection was addressed as an issue during Forest planning (Forest Plan, p. 26). There were public concerns and legal requirements to protect soil and water resources. Concerns included water supply and quality and the monitoring of the same. Detailed direction, standards, and guidelines for soil and water are found on pages 79-82 to insure compliance with strict legal standards. Also, Appendix R provides guidance for riparian area management, and Appendix S provides guidance for soil management. Basic concepts are to locate projects on the best-suited areas, use filter and shade strips, and rapidly revegetate exposed soils. Appendix W outlines items to monitor.

What has been monitored?

The *Forest Plan* projected that between 1986 and 2000 an average of 50 acres of soil/water improvements would be accomplished each year (Forest Plan, p. 41). The following displays the acres of improvements that have been accomplished annually in the past.

Figure 26: Acres of Soil & Watershed Improvements Accomplished from 1987 to 1999.



An average of 39 acres/year of soil and watershed improvements were made between 1987 and 1999, but actual accomplishments have varied noticeably from year to year.

What was accomplished in 1999?

In FY 1999, 47 acres of soil and water resources were improved, primarily on the Gauley Ranger District. Also, the following soil survey and sampling was conducted in the Otter Creek Wilderness:

1. Soil mapping was completed on 20,000 acres (the entire acreage of the Otter Creek Wilderness);
2. Transect and field work interpretation was conducted in a continuing effort toward final naming and composition of soil map units;
3. Eight soil types were sampled; and
4. Soil and air temperature probes (10) were placed high, low, and mid-way in the watershed.

What are the future trends and direction?

The *Forest Plan* anticipated that soil and watershed accomplishments would increase over time (p. 0-2). National Forest Service policy and funding are supportive of such improvements; therefore, soil and watershed accomplishments are expected to increase in the future. As discussed in other sections of this report, future watershed projects will focus on restoring natural drainage patterns, reducing sources of sediment, and –

1. Providing input for watershed analyses and working with Natural Resource Conservation Service (NRCS) to get all soil map units within the Forest Proclamation Boundary into the National Soil Information System database;
2. Working with the Forest Ecologist to coordinate the linkages of NRIS Terra and NASIS databases;
3. Updating the attribute data for the Soil Layer in GIS; in partnership with NRCS, updating the soils data on NFS lands to help validate ecological units on the Forest; and helping validate the Forest ecological unit inventory;
4. Working closely with the North East Forest Experimental Station (NEFES) and NRCS in the collection of selected soils chemical and physical data to assess potential effects of management activities on the soil resource (compaction, nutrient level change, soil temperature, organic matter, etc.);
5. Continuing to work with the NEFES, Regional Office, and others in developing Soil Quality Standards to meet the *Forest Plan* monitoring needs; and
6. Working with the Regional Office, and the NEFES to develop Soil Quality Monitoring Standards to detect trends that may reduce the sustainability of the soil resource on the Forest, as well as those employed regionally by the USDA Forest Service.

TIMBER PRODUCTION

What did the Plan say?

Vegetation manipulation was addressed during Forest planning as a Problem (FEIS vi-vii, 1-8, 1-12, 1-13, 2-12, 2-51 thru 2-55, A-26, A-31, A-36, and A-37; *Forest Plan*, pp. 22-24). Vegetation manipulation is the primary tool for producing timber products and managing wildlife habitat. Concerns were expressed over how much timber may be cut, where it would be cut, the types of cutting practices that would be used, and how often timber in the same area would be cut. Wildlife food values and grape vine control were also concerns; as were balancing and distributing age classes and maintaining trees long enough to supply mast and den trees.

The Plan addressed vegetation manipulation, wildlife habitat, silvicultural practices, and timber regulation by—

1. Varying the level of timber harvest;
2. Allocating levels of different silvicultural systems;
3. Varying the rotation ages; and
4. Developing standards and guidelines.

The following pages of the *Forest Plan* address the issues: 41, 44-45, 51, 54-56, 73-79, 110-111, 117, 120-122, 129, 132-135, 143, 146-147, 155, 158, 166-168, 172-175, 185, 192, 195, 202, 208, Appendix B, Appendix E, Appendix H, Appendix J, and Appendix 0-2 (also see wildlife section for wildlife standards and guidelines).

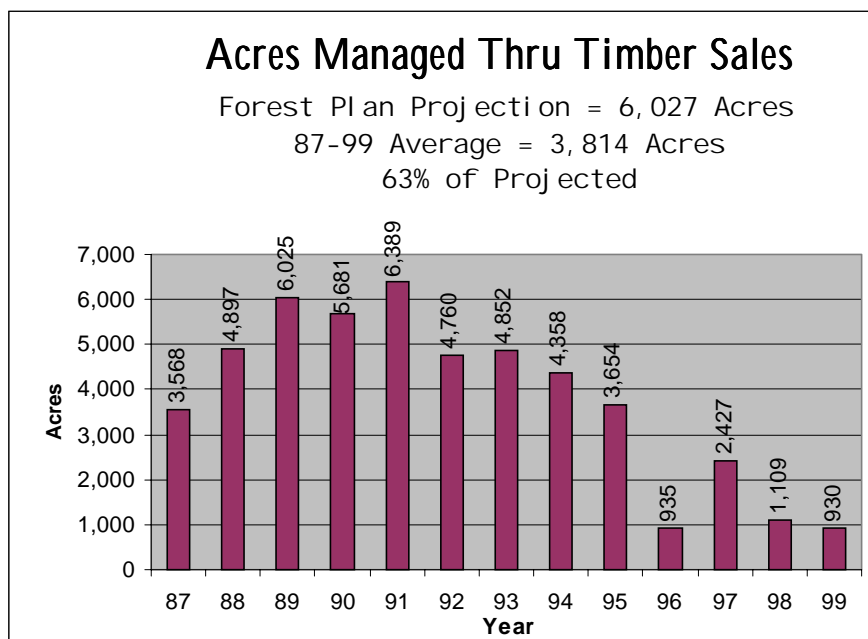
Monitoring was identified on pages 256-257 of the Plan.

What has been monitored?

The *Forest Plan* prescribed timber management for approximately 36% (331,160 acres), and left 64% of the Forest to change via succession or storm and disease events (Appendix B-4). The Plan projected that between 1986 and 1995 the average annual allowable sale quantity (ASQ) would be 43 Million Board Feet (MMBF)

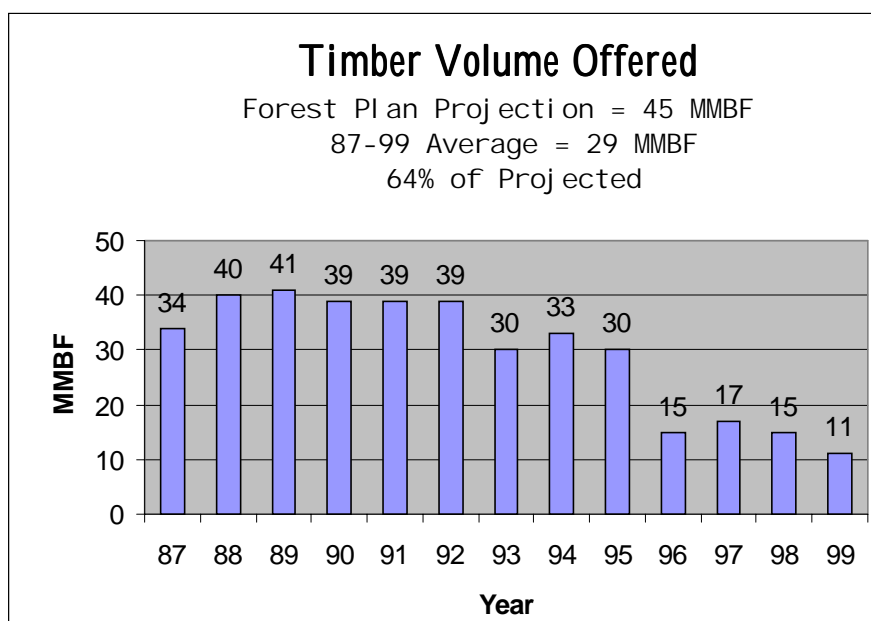
from 6,027 acres (pp. E-1 thru E-10). For perspective, the observer must keep in mind that the first decade rate of 6,000 acres of harvest per year does not indicate that the entire 331,000-acre timber base would be cut over in 55 years (331,000 acres/6,000 acres per year). Improvement harvests, often several, occur on timber stands before the actual regeneration harvest. The following displays actual acres harvested using commercial sales.

Figure 27: Acres managed through commercial timber sale activities since 1987.



About 3,774 acres have been managed through commercial activities annually since 1987; but this average has been declining. Since 1996, an average of 1,350 acres have been managed thru timber sales (22% of projected acres). This is a result of the increased complexity and cost of completing analyses and responding to appeals; decreasing budgets and continuing efforts to protect endangered, threatened, and sensitive species habitat. Between 1986 and 2000, the Plan anticipated that an average of 44.9 MMBF/year would be offered.

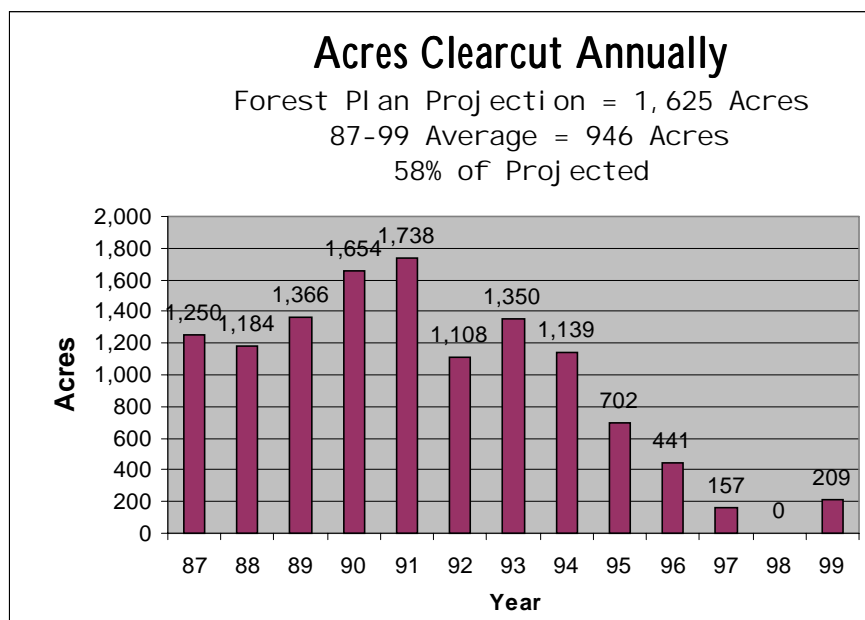
Figure 28: Timber Volume Offered from 1987 thru 1999.



As Figure 28 shows, the volume of timber offered also has been declining over time. Annually, an average of 29 MMBF has been offered since the Plan was developed. In the last four years, the average volume sold per year has decreased by about half that of previous years, down to a level equivalent to 32% of what was projected during Forest planning.

It was projected that, between 1986 and 2000, an average of 1,625 acres would be clearcut. The following displays actual acres clearcut since 1987.

Figure 29: Acres Clearcut Annually Since 1987.



As the graph indicates, the use of clearcutting as a harvest method has drastically declined over. Since 1996, only an average of 202 acres have been clearcut, less than 12% of what the Plan projected. The observer must keep in mind, however, that monitoring clearcut acres can be misleading. At the time of the Plan, clearcutting was basically a euphemism for even-aged management, and was the practice monitored easily as a valued substitute for the even-aged concern. In 1994, other even-aged regeneration methods began to be used more to ameliorate the visual impacts of clearcutting. Although the amount of even-aged management has decreased over the past five years, the effect might better be measured as the total of clearcuts plus two-aged plus shelterwood regeneration cuts. This adjustment would add approximately 437 acres to the clearcut acreage total in 1994; 482 acres in 1995; 72 acres in 1996; 324 acres in 1997; 558 acres in 1998; and 200 acres in 1999.

Page 256 of the Forest Plan stated that volume (MMBF) and acres should be tracked by harvest method, management prescription, and timber type –

1. To compare timber harvest accomplishments with objectives;
2. Confirm that the intent of management prescriptions are met;
3. Assure harvest on unsuitable lands is incidental and/or meets other resource needs; and
4. Assure allowable sale quantity is not exceeded.

Page 257 stated that monitoring should be done to confirm compliance with standards and guidelines, particularly regeneration, acreages, opening size, and spacing, and other vegetation practices. It also called for monitoring to determine VQO accomplishments and to verify maintenance and/or enhancement of diversity.

In regards to monitoring, opportunity area and project analyses are conducted annually, which –

1. Document the Management Prescriptions to be affected by harvesting and explain how proposed activities are likely to affect an area's desired future condition;
2. Ensure harvesting on unsuitable lands is avoided, unless needed to meet specific resource needs;
3. Examine the environmental effects of proposed timber harvesting;
4. Explain the timber types to be harvested and methods to be used; and
5. Identify the volume that is anticipated from such cutting and the anticipated returns to the treasury and 25% payments to Counties.

On an intermittent basis, the Forest takes information from these analyses and summarizes it to display trends (e.g. 1992 Monitoring and Evaluation Report and 2000 Biological Assessment).

What was accomplished in 1999?

Approximately 11 MMBF was offered in 1999. During that same year, 8.9 MMBF sold. The acres harvested and acres clearcut in 1999 were not available at the time this report was published.

What are the future trends and direction?

The *Forest Plan* predicted that timber volume offered would increase from 40 MMBF in 1986 to 75 MMBF by the year 2030 (Forest Plan, 0-2). As the previous graphs indicate, past trends are not consistent with Plan projections. The acres managed using commercial timber sale and the volume of timber offered each year have been declining noticeably over the past years. Approximately 20-25 MMBF may be harvested from 2,700 to 3,700 acres in the future, but this estimate may increase or decrease once road management and roadless policies are finalized and implemented.

The Plan anticipated that the average annual acres clearcut would increase from 1,563 in 1986 to 2,000 in 2030. The current trend for clearcutting is drastically different than the Plan's projection; and future acres clearcut are expected to remain low. Many people have expressed displeasure with the striking visual changes that result from clearcutting. Therefore, over the years, the Forest has responded to their concern by implementing other even-aged practices such as shelterwood and two-age cuts. These methods help meet the same silvicultural objectives as clearcutting, but they leave overstory trees dispersed throughout the unit to soften the visual effects and provide structural diversity in the regenerating stand. Recent research indicates that these methods may have the added benefit of having less impact on neotropical migratory birds than clearcuts, but further research is needed to fully understand the effects because reduced growth and increased stocking of less desirable species (from both a timber management and wildlife perspective) may also be the legacy of visual mitigation.

TIMBER STAND IMPROVEMENT

What did the Plan say?

Timber Stand Improvement (TSI) was a concern addressed as part of the Vegetation Manipulation Problem (FEIS, pp. A-36; Forest Plan, pp. 22-24). It was addressed by establishing standards and guidelines (Forest Plan, pp. 77-79, 111, 121-122, 135, 147-148, 158, 176, and 195).

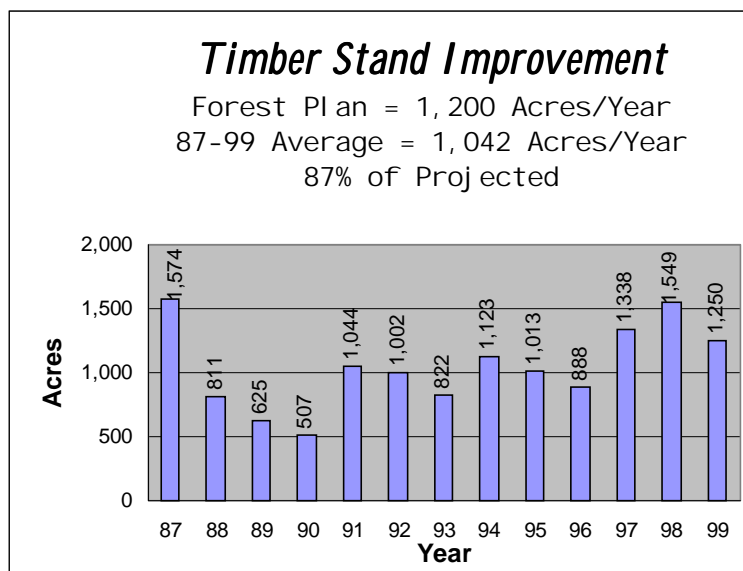
What has been monitored?

On average, a total of 1,042 acres per year receive TSI treatment. TSI includes non-commercial treatments such as release of desirable trees from competition, pre-commercial thinning, vine control, and pruning (Forest Plan, p. 44). Herbicide TSI has averaged 100 acres per year. Herbicides provide a cost-effective method of releasing

seedlings by controlling competing vegetation. Treatment typically consists of direct triclopyr (Garlon 3A/4) application to individual small (<4-inch diameter) stems.

The *Forest Plan* projected that an average of 1200 acres of timber stand improvement would be implemented each year (p. 41). The following figure displays the actual acres that have been improved each year since 1987.

Figure 30: Timber Stand Improvement Outputs from 1987 to 1999.



As with other timber related accomplishments, TSI accomplishments are below *Forest Plan* projections. Again, many issues that drive today's management were not known at the time the Plan was approved. Decreasing budgets, increasing costs to conduct complex environmental analyses and implement projects, efforts to protect endangered, threatened, and sensitive species, etc. all affect the Forest's TSI accomplishments.

What was accomplished in 1999?

In 1999, 1,250 acres were improved.

What are the future trends and direction?

The *Forest Plan* projected that TSI would remain at 1,200 acres per year thru 2030 (Appendix O-2). Factors that have affected past accomplishments are not expected to change. Thus, TSI treatment is expected to remain at approximately 1,000 acres/year. Herbicide TSI is expected to remain at 100 acres/year (10% of total TSI).

TRAIL CONSTRUCTION/RECONSTRUCTION

What did the Plan say?

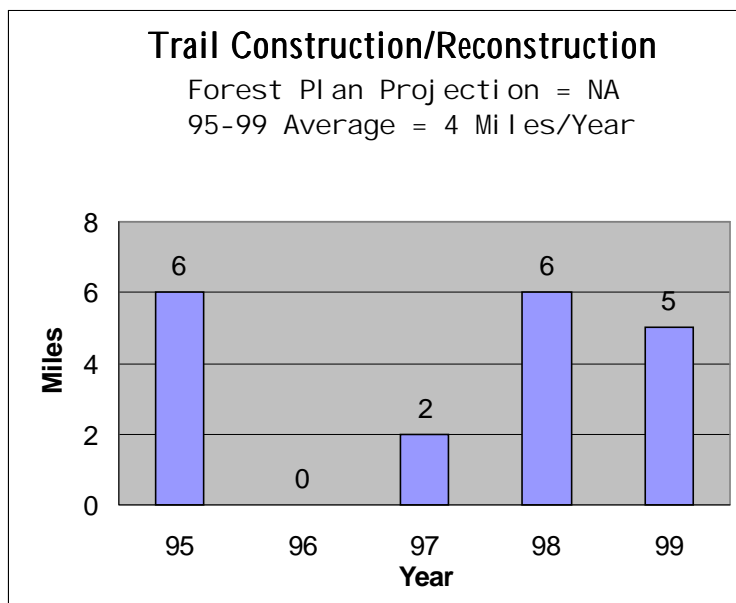
Trails were addressed as Issue 23 in the Plan (FEIS, pp. A-38 and A-39; Forest Plan, pp. 27-28). Page A-39 of the *FEIS* stated, "a major trail and trailhead construction program will take place in those areas where semi-primitive nonmotorized recreation will be provided." Items such as construction and maintenance priorities and vehicle use of trails were addressed under standards and guidelines (Forest Plan, pp. 68-69, 110, 118, 130, 144, 156-157, 170, 185-186, 193, 203, and 206). Monitoring for trails was included in the Recreation monitoring.

What has been monitored?

The *Forest Plan* did not project outputs for trail reconstruction, but did project that trail construction would average about 27 miles/year during the first two decades after the Plan. The Forest has been tracking trail

construction and reconstruction together. The following figure displays accomplishments for both trail reconstruction and construction.

Figure 31: Trail Construction/Reconstruction Accomplishments from 1995 to 1999.



Combined, trail construction and reconstruction outputs have averaged about 5 miles a year, well below the projected Plan output for construction alone (Forest Plan, p. 41). This is probably more in keeping with on-the-ground needs. Recent trail construction projects primarily have involved bridge installation and trail relocation.

There has been no specific trail monitoring.

What was accomplished in 1999?

Some trail maintenance continues to be done with force account labor, but volunteer groups now do almost all trail improvements.

What are the future trends and direction?

The Plan projected that from 2001 to 2010, 10 miles/year of trail would be constructed. If past trends are any indication, future trail construction is not likely to meet this projection. Due to limited funding, the Forest has been focusing its efforts on maintaining existing trails rather than creating new ones. It is anticipated that future trail construction and parking area development projects will be accomplished with partners or special funding.

As the Monongahela is able to offset additional funds for developed facility maintenance, more emphasis will be placed on maintaining existing trails and improving trail information and signing.

WILDERNESS

What did the Plan say?

Plan Issue 13 addressed Wilderness (Forest Plan, p. 26). A focus on management problems instead of further designation was called for. Increased use was forecast and the need for controls on use were foreseen, but not in this plan period. The need for research to verify Wilderness carrying capacity figures and recreation visitor expectations was identified.

Wilderness standards and guidelines are on *Forest Plan* pages 153-163. Monitoring is to focus on deterioration of Wilderness attributes and a determination of the Limits of Acceptable Change (Forest Plan, p. 259).

What has been monitored?

In the 1980s students from WVU inventoried and marked on the ground all campsites within Otter Creek, Dolly Sods and Cranberry Wildernesses. This was intended to be the beginning of research to determine a Limits of Acceptable Change for each Wilderness. Unfortunately, changes in staffing at the university and graduation of students who worked on the project left it unfinished and gave the Forest only partial, unfinished data.

What was accomplished in 1999?

Air quality monitoring and soil studies were conducted in the Forest's wildernesses (see soil section).

What are the future trends and direction?

The Monongahela Wilderness Team will continue to attempt to determine Limits of Acceptable Change for all five Wildernesses. If the WVU research into recreation use comes to be, wilderness use will be a major component. This might lead to bringing back the permit system for those areas being overused.

WILDLIFE HABITAT IMPROVEMENTS

What did the Plan say?

Wildlife management/remote habitat was a major issue during *Forest Plan* development that was addressed under the Vegetation Manipulation Problem (FEIS, ii, vi, vii, 1-8, 1-11, 1-12, 3-15 thru 3-20, 4-17 thru 4-22, A-26, A-28, A-31, and A-35; Forest Plan, pp. 22-24). The amount and location of remote habitat, especially for black bear and wild turkey were major concerns. These concerns were addressed by allocating land for wildlife management emphasis; selecting appropriate silvicultural practices for wildlife emphasis; and developing standards and guidelines (Forest Plan, pp. 83-88, 111, 122-124, 136-137, 148-150, 158, 176-178, 188, 195a, 203, 208, Appendix C, Appendix L, Appendix T, Appendix U, and Appendix X).

Pages 251-252 and 255-256 outlined monitoring to address wildlife concerns, and Appendix L described population objectives for management indicator species. For example, population trends for MIS are to be monitored to determine whether population viable populations of all wildlife species are being maintained. Also, monitoring was to confirm compliance with standards (particularly the road closures, vegetative diversity, and wildlife habitat practices) and determine if sensitive species objectives and standards are being met.

What has been monitored?

The Forest cooperates with the WVDNR to accomplish wildlife objectives and conduct monitoring. Working together, several hundred acres of wildlife habitat restorations and enhancements are completed annually, about 30 of these acres being new wildlife openings. Most work on the remaining acres involves maintaining previously-created habitat improvements (e.g., mowing wildlife openings), and to a lesser extent placing nest boxes (bluebird, squirrel, wood duck, etc.) and nesting platforms, planting mast trees/shrubs, pruning and grafting fruit trees, and releasing soft and hard mast trees/shrubs. A major emphasis in the early 1990s was the creation of dozens of wildlife waterholes annually, in areas that lacked permanent water sources. That rate has slowed down more recently, with approximately ten waterholes constructed annually for the past 3 years.

The Forest monitors habitat trends and does some Management Indicator Species (MIS) survey work, but WV DNR tracks population trends for most MIS species. The Forest MIS are endangered bats, West Virginia northern flying squirrel, Cheat Mountain salamander, white-tailed deer, black bear, wild turkey, varying hare, gray squirrel, and wild trout. These species were selected as MIS during Forest planning because their

population changes are believed to indicate the effects of management activities on the fish and wildlife resource. **Monitoring of population trends of MIS** and discussions follow.

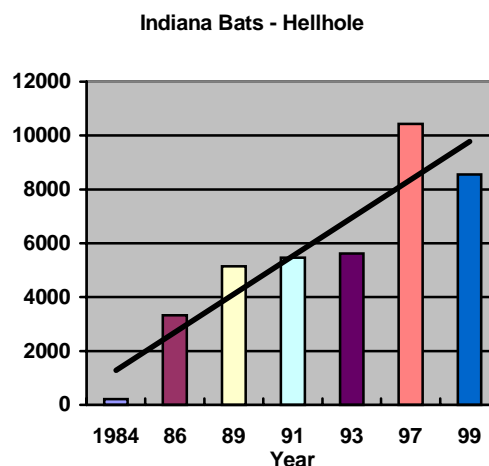
Indiana bat, *Myotis sodalis*, (IB) was listed as endangered on March 11, 1967. A USFWS Recovery Plan was developed and signed October 14, 1983. In October 1996, the Indiana Bat Recovery Team released a Technical Draft Indiana Bat Recovery Plan. In October 1997, a preliminary version entitled "Agency Draft of the Indiana Bat Recovery Plan," which incorporated changes from the 1996 Technical Draft, was released. Subsequently, an agency draft entitled "Indiana Bat (*Myotis sodalis*) Revised Recovery Plan" was distributed for comments in March 1999. A final revision is being prepared. The Monongahela National Forest is currently in the process of completing a Biological Assessment on all Threatened and Endangered Species on the Forest.

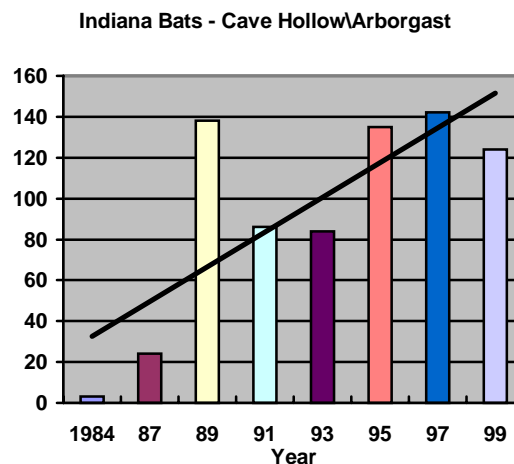
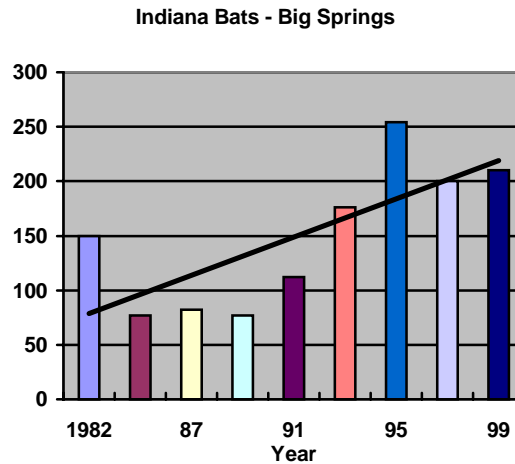
Hibernacula monitoring shows IB populations are decreasing in portions of their core range (USFWS 1996), but not in West Virginia, where estimated populations have been increasing since the early 80's (Endangered Species Federal Assistance Performance Reports, WVDNR 1981-99). Most significant caves are gated or fenced, which has protected IB populations and likely has been responsible for their increases (Wallace, 1999). In the last decade, WV has seen a 45% increase in the number of hibernating IB (Wallace pers. comm. 1999) with the total IB in the state at approximately 10,658 (Stihler and Wallace 1999). This represents 3% of the entire hibernating IB population range-wide.

The majority of West Virginia's known Indiana bat hibernacula are closed to public use. Eleven hibernacula, including Hellhole, are within the MNF Proclamation Boundary, but only three (Big Springs Cave, Cave Hollow/Arbogast Cave, and Two-Lick Run Cave) have all or most of their entrances on MNF land. Cave Hollow/Arbogast Cave is gated with a year-round closure order. Two-Lick Run Cave is signed as closed and Big Springs Cave is gated from September 1 to May 15.

Hellhole, West Virginia's largest hibernaculum, is the only West Virginia cave currently designated Critical IB Habitat (Priority Two) (USFWS 1996); it lies within the Forest's Proclamation Boundary, but on private land approximately 1 mile from National Forest land. Use of Hellhole has been on a steady increase for the past 16 years. In 1983-84, this cave wintered only 210 IB, and the numbers have increased yearly, as shown below.

Figure 32-34: Indiana Bat Populations Over Time.





The **Virginia big-eared bat** (VBEB), *Corynorhinus townsendii virginianus*, reclassified from the genus *Plecotus*, was listed as endangered under provisions of the Endangered Species Act on December 31, 1979. A Recovery Plan, developed by the U.S. Fish and Wildlife Service, was signed May 8, 1984. A Biological Assessment is in the process of being completed.

VBEB is a geographically isolated and sporadically distributed cave obligate species. While it is known from karst areas in eastern Kentucky, eastern West Virginia, extreme western Virginia, and western North Carolina (Clark and Lee 1987), West Virginia holds its largest populations, particularly Pendleton County (Barbour and Davis 1969, Stihler pers. comm. 2000). West Virginia's Cave Mountain Cave, Hellhole, Hoffman School Cave, Sinnit Cave, and Cave Hollow/Arbogast Cave are designated as "Critical Habitat." Cave Mountain and Cave Hollow/Arbogast are on the MNF.

Fourteen West Virginia caves are known to be VBEB hibernacula, summer maternity sites, or both. Three of those caves are located on the MNF; they harbor approximately 30% and 7% of all VBEB in West Virginia during summer and winter, respectively.

Eleven caves in WV are monitored for summer VBEB use by WVDNR. Three of these are on MNF land. Cave Hollow/Arbogast Cave has had the largest maternity colony sites of these caves, and is also a hibernaculum. As a designated Critical Habitat by the USFWS, it is closed year round to public entry. Cave gates were installed on 4 known Forest Service entrances and 1 private entrance to this cave system in 1996.

Prior to 1996, 10-ft chain-link fences were used as closure devices but they did not effectively exclude vandals. The new gates appear to have increased the suitability of this cave. Winter counts increased from 287 in 1995 to 296 bats in 1999.

Cave Mountain, also designated as Critical Habitat, is used as a maternity colony site. It is closed to the public from April 1 through September 1, and opened in winter. Rebar style gate closures were replaced in 1995 with angle-iron gates. Summer 1998 censuses counted 637 bats exiting the cave to forage. This is a 10% decline from 1997 surveys; however, a nearby cave on private land has increased by approximately this same number so it appears that the bats have switched roost sites.

Peacock Cave is a VBEB hibernaculum and maternity cave. It is isolated and signed for year-round closure. The entrance is extremely small and currently not gated. Gating would be a last resort since gate installation could affect airflow and microclimate at such a small entrance. WVDNR data have indicated no population problems from human disturbance in this cave. In fact, maternity colony populations have increased since 1983. Summer colony census counted 862 bats in 1998, up from 800 in 1997.

Known summer VBEB colonies within the proclamation boundary of the MNF were estimated at 6,275 in June 1998 using night vision equipment.

Figure 35-37: Results of WVDNR Virginia Big-eared Bat Summer Census in WV.

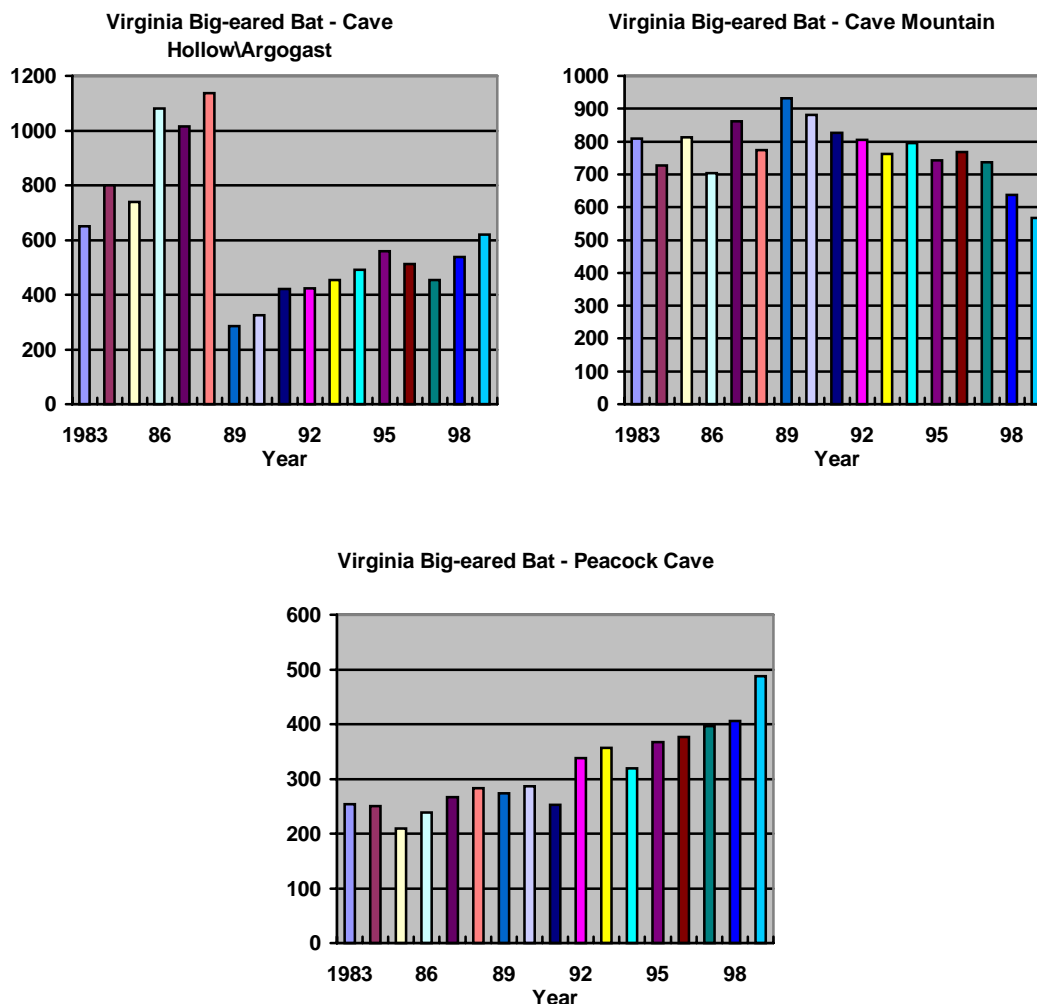
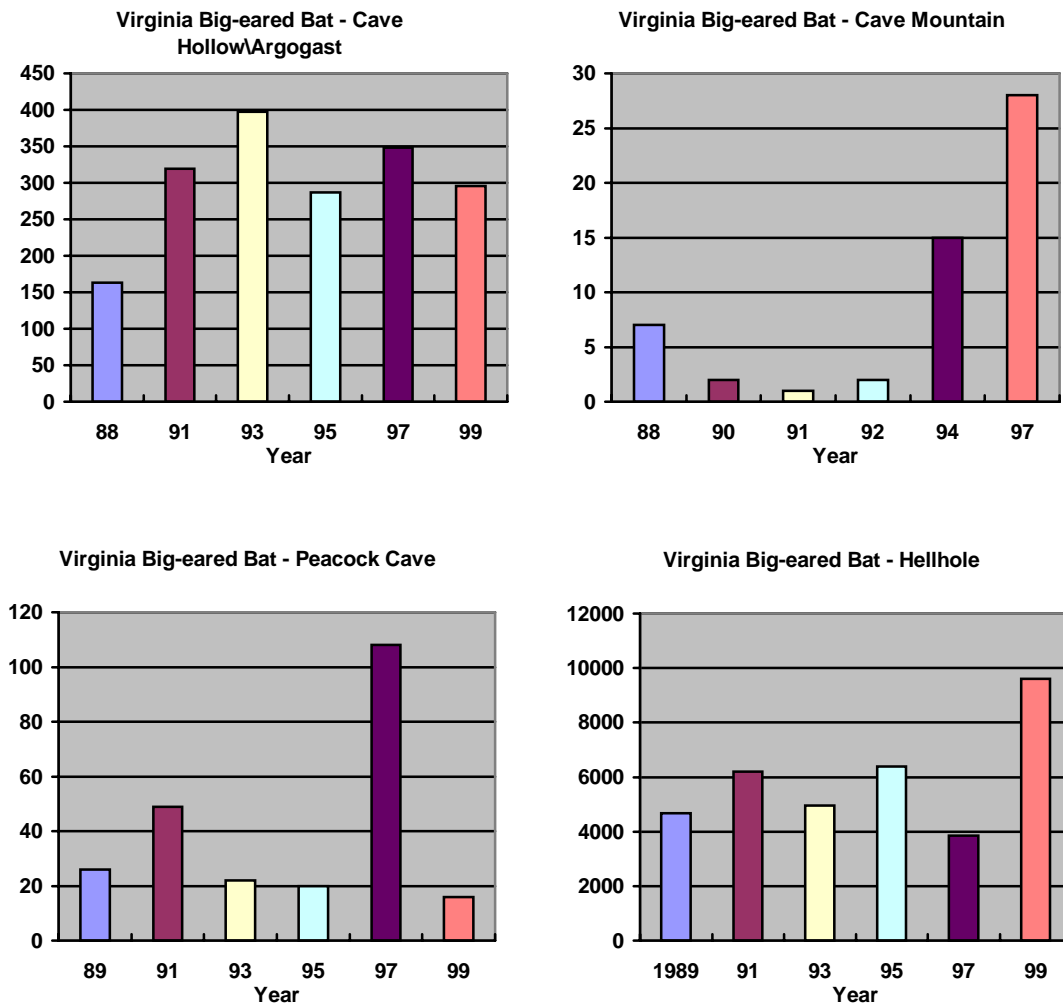


Figure 38-41: Results of WVDNR Virginia Big-eared Bat Winter Census in WV.
(Stihler, 1988-1999)



On July 31, 1985, USFWS listed **West Virginia Northern Flying Squirrel (WVNFS)** *Glaucomys sabrinus fuscus* as endangered (50 CFR Part 17). An Appalachian Northern Flying Squirrels (*Glaucomys sabrinus fuscus*) (*Glaucomys sabrinus coloratus*) Recovery Plan (USFWS 1990) was released September 24, 1990, for two endangered subspecies of northern flying squirrel.

At the time of its listing, Stihler et al. (1995) noted that only ten WVNFS specimens in Randolph and Pocahontas Counties in WV and two specimens from Highland County in Virginia were known. Subsequent nest box surveys and live trapping done from 1985 through July, 1999 in West Virginia found 878 additional WVNFS at 91 sites in Greenbrier, Pendleton, Pocahontas, Randolph, Tucker, and Webster counties (Stihler and Wallace 1999). WVNFS have been captured above 2,750ft in elevation (WVDNR unpub. data), which closely parallels red spruce distribution in West Virginia's Allegheny Mountains. The WVNFS range extends southwestward from Canaan Heights and the northwestern edge of Dolly Sods Wilderness (both in Tucker County) to Briery Knob (Pocahontas County) and Rabbit Run (Greenbrier County) (Stihler et al. 1995). A recent capture in 1999 extends the range of the species north from Canaan Heights to North Fork of the Blackwater (Tucker County) (WVDNR, unpub. data). The MNF contains more than 90% of West Virginia's WVNFS habitat (Stihler, pers. comm. 1999), including 89 of 91 capture sites (Wallace, pers. comm. 1999).

WVNFS is now known to be more abundant and widespread than thought at the time of listing, based upon nest box and live trapping surveys. Five hundred twenty-five WVNFS were captured from 1985-1993. At that time, WVDNR requested USFWS to review the endangered status of WVNFS to determine if downlisting to a threatened status was warranted. The basis for this request was that while preferred habitat (red spruce/northern hardwoods) restricts its range, the subspecies is not in danger of becoming extinct in the foreseeable future (Stihler, 1994). Completion of this review is pending.

Since the subspecies was listed, 878 captures have been documented in WV through July 1999 (Stihler and Wallace 1999); 97% of these captures have occurred on MNF lands.

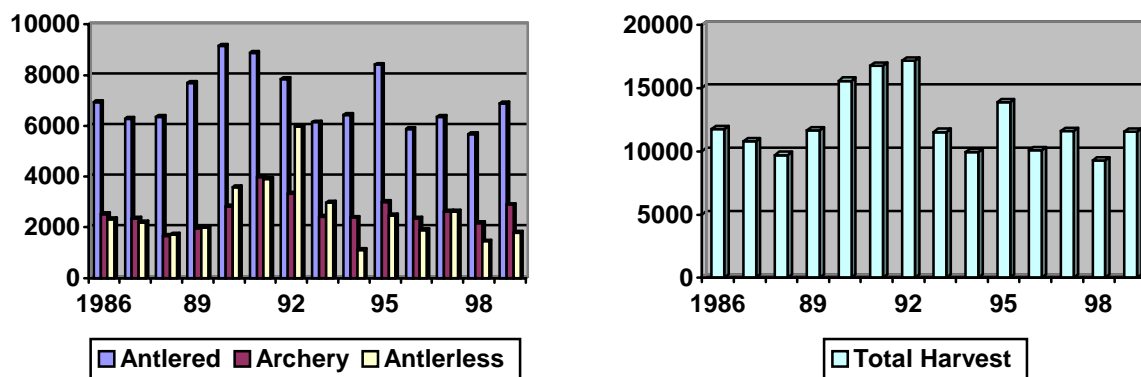
On September 28, 1989, the U.S. Fish and Wildlife Service (USFWS) determined that the **Cheat Mountain salamander** (CMS), *Plethodon nettingi* Green, was in threatened status (Federal Register, Vol. 53, No. 188:37814-37818). A CMS Recovery Plan was released on July 25, 1991 by the USFWS.

CMS is a relict species of 59 disjunct (Pauley and Pauley 1997) and genetically isolated populations (Kramer et al. 1993). It is geographically restricted to high elevation forests containing a red spruce component (Highton 1971, Pauley and Pauley 1997) and mixed deciduous forests with a Bizzania-dominated forest floor (Pauley and Pauley 1997). The highest elevation at which CMS has been recorded is 1482 m (4860 ft), on top of Spruce Knob (Tom Pauley pers. comm). Their range is a 700 square mile area exclusively within West Virginia (Pauley 1991), with 88.2 percent of the known populations located within the MNF. Seventy-five percent of the known populations have less than 10 individuals (Pauley 1991). Distributions of CMS include Tucker, Randolph, Pocahontas, Grant, and Pendleton Counties (Pauley and Pauley 1997) extending from Backbone Mountain in the north to Back Allegheny Mountain in the south. Historically, the range of CMS was likely more extensive than it is today. Natural events and extensive logging eliminated over 93% of the original spruce acreage by 1920 (Clarkson 1964).

Known and potential range distributions of CMS populations on the Forest have been delineated on USGS topographic maps by Dr. Thomas K. Pauley of Marshall University, the leading authority on the life history and range distribution of the CMS.

The amount and location of remote habitat, especially for black bear and wild turkey, has been a major concern. In addition, annual harvest data is used in order to indicate population trends of several animals that are economically important on the Monongahela National Forest. Generally, harvest figures collected by WVDNR are used to indicate population trends of **White-tailed Deer, Black Bear, and Wild Turkey**. Harvest figures for the Monongahela National Forest are as follow:

Figure 42-43: White-tailed Deer Harvest Figures on the MNF 1986-1998.



Bear population trends continue to be upward and consistent with *Forest Plan* projections.

Figure 44-45: Black Bear Harvest Figures for the MNF 1984-1999.

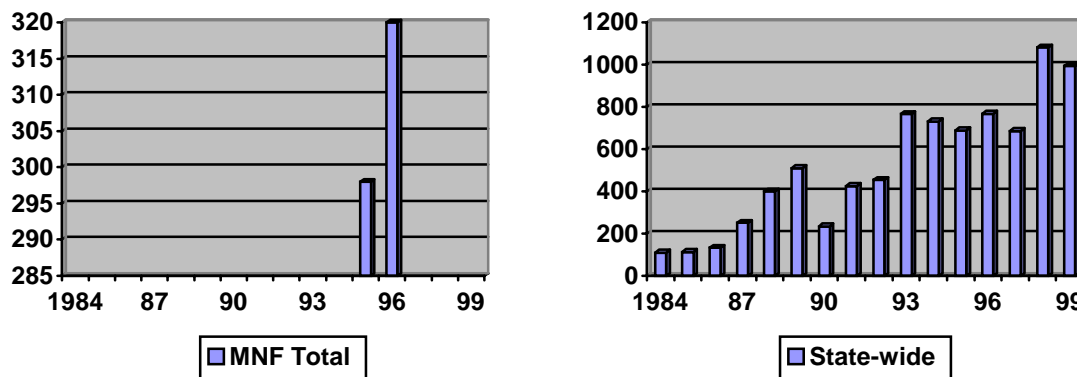
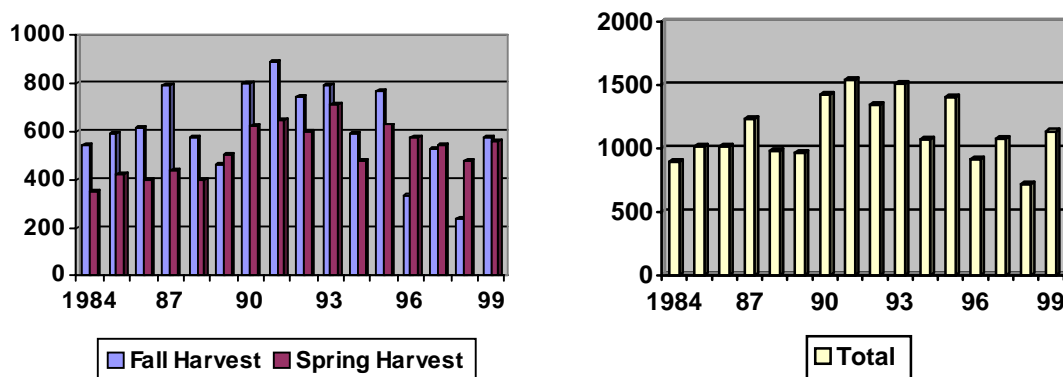


Figure 46-47: Wild Turkey Harvest Figures for the MNF 1984-1999.



The following monitoring was completed recently for **endangered, threatened, and sensitive species**:

To promote its recovery, the endangered Running Buffalo Clover (*Trifolium stoloniferum*) has been monitored. Of 23 known sites, 20 were monitored in 1997. There were 7 sites that decreased in numbers of rooted crowns; 7 sites that increased; 2 sites that remained about the same; and 4 that were not comparable due to various reasons. Of the comparable sites, there was an overall decrease of 17% rooted crowns, which could be due to natural population variations.

Eighteen known sites of running buffalo clover were monitored in 1998. Most populations remained within the range of variability of this species. Four exceptions to this are: 1) Lower John's Run, which had a logging road built through it; 2) Bowden and Hoe Lick in Randolph Co., which had large decreases in their number of rooted crowns, yet no apparent changes occurred in the habitats; and 3) Upper John's Run, which declined due to road improvement disturbance. Six potential sites were surveyed in Preston and Tucker counties, but none was found.

In 1997, two sites were monitored for Shale Barren Rockcress (*Arabis serotina*). No plants were found in Greenbrier County; the last time *A. serotina* was observed at this site was in 1993. Thirty-seven bolting plants and eleven rosettes were observed at another site. A limited number of potential sites were surveyed, but no plants were found. No sites were monitored on the MNF in 1998. The sites were to be monitored as a cooperative agreement between the FS and the WVHP, but the forest botanist left.

The one population (2 sub-populations) of Virginia Spiraea (*Spiraea virginiana*) known to occur on the MNF was monitored in 1997 in compliance with the Recovery Plan. The plant is clonal, so area covered was recorded. Total area covered by the plant was 13.7 m². The population appears to be stable. In 1998, surveys were conducted for new populations on the Greenbrier River, but none were found.

One population of Small Whorled Pogonia (*Isotria medeoloides*) was discovered on the Forest in 1996. In 1998, the known site was surveyed, but no plants were found. This species is notorious for disappearing and then reappearing the following year.

Ammon's Moss (*Syntrichia ammonsiana*) has been globally ranked by the North Carolina Heritage Program and WVHP as G1 (critically imperiled within the state). It has been placed on the U.S. FS Region 9 Sensitive Species List. It grows within the Monongahela, on the Gauley Ranger District. In 1998, this species was not monitored, due to limited funds.

What was accomplished in 1999?

The following summarizes the **wildlife program accomplishments** in FY 1999:

1. Acres Restored or Enhanced: 150 acres.
2. Wildlife Structures Constructed: 23.
3. Acres of Habitat Inventoried: 995 acres
4. Wildlife Partnership Projects: 3.

In 1999, **threatened, endangered, and sensitive species** (both plant and animal) **surveys** were conducted on the Forest by the MNF and WVDNR. Results are summarized for MIS above, others may be found in WVDNR's Endangered Species Federal Assistance Performance Report for 1999.

In March 1999, Hellhole Cave was monitored and found to hold 8,548¹ of West Virginia's estimated 10,658 IB populations. Also, in 1999, summer maternity censuses counted 620 Virginia big-eared bats compared to 559 in 1995.

The WVDNR and Monongahela monitored 25 sites for running buffalo in FY 1999. Four populations have significantly decreased even though the habitat has remained unchanged (Baker Sods, Dry Fork, Hoe Lick, and Rich Mt. Microwave). Two populations have decreased due to disturbance (Brush heap and Parsons). One site, Upper John's Run, continues to be disturbed by vehicular traffic, and has been virtually destroyed. No sites have increased beyond a normal fluctuation for this species. Two new populations were found in Randolph Co.

The Monongahela National Forest is in the process of reviewing the current Regional Foresters Sensitive Species (RFSS) list. This effort will likely result in several species being taken off the list and a number of others (mostly plant species) may be added. The MNF continues to consider RFSS in its management actions.

In 1999 the MNF completed several inventories to document and/or monitor sensitive species on the Forest. These include surveys for Eastern Small-footed Bat (*Myotis leibii*), Allegheny Woodrat (*Neotoma magister*),

¹ The area known as Tina Hall, a site containing approximately 500 IB in 1997 was not surveyed in 1999 (Stihler and Wallace 1999).

Northern Goshawk (*Accipiter gentiles*), Timber Rattlesnake (*Crotalus horridus*), numerous plant species on the RFSS list and others.

Six sites were surveyed for Shale Barren Rockcress in 1999. Most of these sites declined since the last monitoring was done. Three shale barrens in Greenbrier Co. were visited. These sites are all marginal habitats and no *A. serotina* was found. All of these sites have had this plant in the past.

In 1999, one of the sub-populations of Virginia Spiraea was measured and found to be increasing in extent from the last observation. No Small Whorled Pogonia was observed at a known site in 1999. Five subpopulations of Ammon's Moss were located in 1999. These appeared healthy and about the same size as previously recorded. Three sub-populations were not relocated. This could be because small, scattered, individual plants or clumps are hard to locate. The populations do not appear to be threatened by trail use.

Currently, a Programmatic Biological Assessment (BA) is being completed to document potential effects of continued implementation of the 1986 (as amended) *Forest Plan* on nine federally listed threatened and endangered (T&E) species that occur on the Monongahela. Those species are: Bald Eagle (*Haliaeetus leucocephalus*), Cheat Mountain Salamander (*Plethodon nettingi nettingi*), Indiana Bat (*Myotis sodalis*), Virginia Big-Eared Bat (*Corynorhinus townsendii virginianus*), West Virginia Northern Flying Squirrel (*Glaucomys sabrinus fuscus*), Shale Barren Rock Cress (*Arabis serotina*), Virginia Spirea (*Spiraea virginiana*), Running Buffalo Clover (*Trifolium stoloniferum*), and the Small-Whorled Pogonia (*Isotria medeoloides*).

The BA is intended to ensure that management decisions can be made with the most current and state-of-the science information concerning these species. The BA will provide a basis for additional consultation with the USFWS, subsequent *Forest Plan* amendments if needed, and input into future management decisions.

What are the future trends and direction?

Efforts to inventory for and monitor MIS, threatened and endangered species, and Regional Foresters sensitive species will continue, assuming funding levels reverse trend and remain appropriate. Emphasis for this inventory and monitoring is likely to shift to a more community based effort at larger scales (i.e. watershed or landscapes). Recovery of species will continue to be a focal point – especially with regard to habitat protection and restoration. Conservation Assessments, and subsequent Strategies, for species identified on the revised RFSS list will be undertaken under a priority basis.